AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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THE IMMIGRANT'S FIRST FARM INVESTMENT

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VARIETY AND VOLUME.

No other paper of the kind presents such a great amount and variety of matter as the *American Agriculturist*. Some of the most interesting features, like the Humbug Department, are to be found in the last form, which is the last to go to press, and embraces the Advertising pages.

FARM WORK FOR JULY.

Summer Fallows, once so common, are now considered of questionable value as a means of bringing up the fertility of an over-cropped soil. It is cheaper either to apply some commercial fertilizer, or grow a scavenger crop, like buckwheat, and plow it under as green manure. There is considerable loss of soluble plant food in a bare fallow, that growing plants will take up and hold. The mechanical improvement of a heavy soil by fallowing is not to be overlooked, and the killing of the weeds in foul land by the frequent stirring of the soil, is another important advantage gained by a summer fallow. Nearly all these good results are, however, obtained by a quick-growing crop, that is turned under before weeds have time to form seeds.

Early Potatoes should be harvested as soon as ripe, lest wet weather cause them to sprout and rot. A second crop may be grown by planting the early and quick-growing kinds by the first of the month. The late crop should be kept free from weeds and the destructive Potato beetle.

Roots.—Ruta-bagas or Swedish turnips may be sown until the middle of the month. The ground cleared of early potatoes is especially fitted for a crop of turnips. The soil must be rich, deep, and mellow, and the seed, three pounds to the acre, sown in drills thirty inches apart.

Wheat.—To be of the best quality wheat should be cut when the grain, crushed between the finger

AN ELEVEN-SHEAF SHOCK.

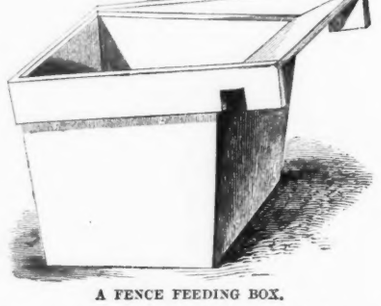
nails, breaks into flour and shows no signs of dough. If there is a heavy harvest, it is better to begin the work a little before this, than to have any cut after it is "dead ripe." Improper shocking of the sheaves is a great source of loss. Each bundle should be set firmly upon the ground. The best way to do this is to take one in each hand, bringing the two down with their heads close together. After three pairs have thus been placed in a row, two more are set on each side, making an oval shock as shown in the engraving. The heads of all the bundles are brought close together, and the cap-sheaf adjusted. A larger shock may be made of four pairs of bundles, with three sheaves on each side. The cap will consist of two sheaves, and the whole shock of eighteen bundles.

Oats may be cut while the straw is somewhat green. If fully ripe, cut in early morning and rake and bind late the following afternoon, to avoid shelling. Shock carefully, as the straw must be well cured before being housed. When wheat follows the oat crop, the stubble may be stirred with a cultivator, to give the scattered grain a chance to sprout before plowing.

Fodder Crops.—Fodder corn may be sown from week to week through July to furnish an excellent supplement to the pastures, that are frequently short and dry in late summer. Golden millet is a productive fodder crop, and on rich soil is ready for cutting in a few weeks from the time of sowing. If there is any left from green feeding, it may be cured into excellent hay. Hungarian grass may be sown early this month, but the soil must first be made rich and mellow.

Live Stock.—Hints and Helps.

Horses need to be kept clean and frequently curried. Washing the legs is advisable, especially if the animals are worked in mud and dust. Clean the stables daily, to prevent the accumulation of troublesome flies. A weak solution of carbolic acid or a decoction of smart weed will aid in keeping off the flies, while the team is in the field. Fly nets of light cloth are inexpensive, easily made, and should be worn by all work horses when in the harness. Grass alone is insufficient feed; to it add a good supply of oats and corn, ground together and mixed wet with cut hay. It is sometimes best to feed the horses in the field, and for this a box shown in the engraving is convenient.



A FENCE FEEDING BOX.

It is fitted with notched side pieces, to fasten over fence boards, on which the box is hung. Feeding oats on the ground is wasteful and unpleasant.

Cows.—If the flow of milk is once reduced, it is difficult to bring it up again, therefore use all the extra feed necessary to prevent the decrease. Green fodder alone is not enough to piece out the short pasture, and some ground feed should accompany it. A cool, dark stable is preferable for cows to a hot pasture in midday. Dry earth makes a better summer litter than straw.

Sheep intended for the butcher need abundant feeding. Oil cake with the ground feed is excellent. Store sheep will thrive in a good pasture, well watered and shaded. The importance of a cool shelter from the hot noonday sun cannot be overestimated. Sheep troubled with dysentery will retire from the flock, and unless looked after, may be lost. Remove the sick animal to a cool shed, and give one ounce of castor oil, followed by bran or oat meal mash. Flies are often troublesome at this season. If maggots are found, apply tar and grease, and clip the wool closely about the affected part.

Pigs.—If to meet the early demand, the young pigs may be pushed rapidly by good feeding. Sows need rich food in abundance, to produce a full flow of milk. Young pigs should have a separate feeding place. A run in clover stubble is relished by

swine. Provide a bed of sand in the yard or pen. Pigs to come in November should be spoken for this month. If the stock is not what is desired, begin at once to improve it by securing the use of some pure-blood male.

Orchard and Nursery.

The early varieties of fruit keep, as a rule, but a short time after ripening, and do not bear long transportation. Early apples, of good size and attractive appearance, meet with a ready sale at high prices. Those who plant orchards near large cities find their greatest profit from early varieties, as with these there is but little competition from distant localities.

Marketing Early Fruit.—It is best to pack early apples and pears in baskets or crates. Pick as soon as mature, before softening takes place, and assort carefully, making three qualities—first and second for market, and a third for the pigs.

Peaches.—The greater the distance from market, the more care should be given to picking. The fruit must remain hard until it reaches the consumer or retailer; any softening while in transportation will cause damage and loss.

Preparing for the Fairs.—Those who compete for the prizes offered for the "best plate" of any variety of fruit, often select the specimens beforehand, and by excessive thinning, cause them to grow to a great size.

Young Trees, planted last spring, are poorly prepared to endure the drouths of mid-summer. If the surface soil can not be kept light by cultivation, a mulch should be put around the tree. This may be straw, litter of any kind, chips, or even stones. All superfluous shoots, those which start where a branch is not needed, should be rubbed off. It is much better to shape the trees while young than to allow them to grow at will for years, and then cut away a large part of the growth.

Budding usually begins this month in the nurseries, the exact time for each fruit being governed by the condition of the stock and the maturity of the buds. Cherries are usually budded first, then plums, which are followed by pears.

Blight is the name for the greatest affliction of the fruit-grower. It attacks pear trees especially, and the first knowledge their owner has of its presence is the blackening and death of a branch or of the whole tree. We are unable to apply a preventive, and can only cut away the dead portions, or the whole tree, and burn them.

The Red Spider, usually regarded as a greenhouse pest, sometimes attacks fruit and other trees in the open air. If the leaves turn dull and brownish, it is probable that the Red Spider is the cause. The insect is so small as to escape notice. If the under surface of the leaves is covered with a very thin web, and minute blackish or red specks are seen moving about, apply either a solution of whale-oil soap or of soft-soap, stirring a small quantity of kerosene with the soap before adding the water. Apply the solutions with a syringe or garden pump to the undersides of the leaves.

The Fruit Garden.

Strawberries.—The treatment of the plants after the fruit is gathered will depend upon the system of culture. If the vines are grown in single rows (the best for the family garden), remove the mulch, cut off the runners, and fork in a dressing of fine manure or some good fertilizer. If any weeds have started in the rows, pull them by hand. Some replace the mulch to keep down weeds, while others prefer to cultivate the soil, and not apply a mulch until cold weather. In the alternate row system, the runners are encouraged to strike in paths that have been spaded and manured to receive them. As soon as pot-layered plants are well rooted, they may be planted out. The striking of runners in pots may be continued.

Raspberries.—Only those shoots or suckers which will be needed for bearing next year, are to be allowed to grow. Hoe up all others.

Currants.—Fruit to be used for jelly should be picked as soon as it is fairly red. Much of the trouble of house-keepers with jelly making, comes from using over-ripe fruit. For the table, the currants can not be too ripe. The season may be prolonged by mulching the bushes. If long and vigorous shoots start and push up in the center of the bush, break them off while young.

Insects Infesting the Grape are numerous, but at the present season they are for the most part large solitary caterpillars and beetles. One who gives his vines proper attention, will discover and destroy these before they do much mischief.

Mildew is the greatest enemy to the grape-grower. While some varieties are more readily attacked than others, in a season when mildew is prevalent, few, if any, are exempt. If small whitish patches, having the appearance of mould, appear on the leaves, usually on the under surface, use sulphur at once. The bellows should be so used as to diffuse the sulphur in a cloud, and allow it to settle upon all parts of the vine. The work should be done in a still day.

Summer-layering.—This method of propagating the grape may be practised this month, as early as the shoots are firm enough to handle. Directions for the operation were given on page 278, in June.

Kitchen and Market Garden.

Asparagus.—The crop of next spring will depend upon a vigorous growth of tops this summer. Do not allow any large number of tops to be cut for use as "fly catchers," as we often see done. Every plant cut now means several spears less next spring. The thick mass of tops will keep down most weeds; if an occasional tall "pig-weed" establishes itself, pull it up. If seeds were sown to grow plants for making a new plantation, keep the bed clear of weeds, and encourage the plants by occasional hoeing.

Beans are hot weather plants, and a sowing of the bush sorts may be made at any time to keep up a succession. If wanted for pickling, the "Refugee" is preferred. If Limas, after reaching the tops of the poles, throw out long wandering branches, pinch off the ends of these, to induce a setting of pods.

Beets.—Continue to thin the earlier sown, and keep clear of weeds. The "Blood Turnip" may still be sown for winter use. We find it much preferable to the large kinds.

Cabbages and Cauliflowers.—Plants, when large enough, are to be set out from the seed-bed. Land which was occupied by early potatoes, with a liberal manuring, makes an excellent cabbage ground. Give the surface of the soil an occasional dressing with the rake, to keep down the weeds. In localities where the "Cabbage-worm" is troublesome, use Pyrethrum powder or hot water.

Carrots.—Continue to work between the rows until the tops are so large as to be in the way.

Celery is usually set out this month. Market-gardeners put it upon land heavily manured for early cabbages or other early crop. Prepare the ground by throwing out the soil with the plow, going twice in the row, and place well-rotted manure in the furrows. Throw the soil back, and work it with the roller and harrow until a fine bed is made. The manured furrows should be three feet apart, and the plants set every six inches in the rows. Keep the plants well cultivated, and replace any that may die, from a reserve lot.

Celeriac is set out in the same manner as celery.

Corn.—Some of the early sorts may still be planted, to give a late supply. If seed is to be saved, select the seed-stalks, and mark them by tying on them a strip of white cloth before any ears are gathered. As soon as the ears are all off, cut up and cure the stalks if not wanted for immediate feeding.

Cucumbers.—If seeds are to be saved, mark the earliest specimens before any are cut for use. Cut all that are large enough, whether needed for use or not, as this will prolong the bearing. Seeds for the pickle crop may still be sown.

Kohl-rabi.—Seeds may be sown for a late crop. If grown in rich soil and used while young, this is a delicious vegetable. The old rule, "use when not larger than a teacup," is a good one.

Martynias.—Keep well hoed, and gather the fruit for pickles while yet so tender as to offer no resistance to the thumb-nail. If any get too old, cut them away.

Melons.—The fight must be kept up with insects. Hand work, when the vines are small, will do much. If the Spotted-beetle attacks the vines, Paris green is the only remedy.

Okra.—Keep clear of weeds, and use while the green pods are tender. If more are produced than are needed for immediate use, slice in half-inch pieces, and dry for winter use.

Onions.—Keep down the weeds by hoeing as often as necessary. For a near market, onions often pay best if bunched and sold while green. When half-grown, from three to six, according to the market, are tied in a bunch, first washing and removing any loose skin.

Peas.—As a rule, late peas mildew. Some of the early varieties may be sown at a venture.

Peppers.—Encourage by frequent hoeing, and cut the fruit as soon as large enough for pickling.

Radishes.—The Chinese Rose-colored Winter, described elsewhere, may be sown this month.

Rhubarb.—After the early fruits are plenty, the rhubarb is allowed to rest, though an occasional picking may be made if desired. Keep the flower-stalks cut away.

Salsify.—Though not generally used until winter, the roots are good whenever large enough.

Squashes.—Keep down the weeds, and when the vines prevent the use of the hoe or cultivator, pull by hand those which appear. Continue the fight with insects. Hand-picking will keep the malodorous black Squash-bug in check. If the vines take root at the joints, do not disturb them. Small, unripe squashes of any of the winter varieties, especially of the Hubbard, when cooked, are superior to the summer squashes.

Sweet-Herbs.—Sage, Thyme, etc., are usually sown in a seed-bed, from which they are transplanted to land left vacant by early crops. They may be set out any time this month in rows a foot apart, with the plants eight or ten inches apart in the rows. They do not make much growth until we have cool nights, but must be kept clear of weeds. Sweet Marjoram, being rather difficult to transplant, does best if sown where it is to grow.

Sweet-Potatoes.—These are often slow in getting a start. Keep the ridges clear of weeds, and it may be necessary to build them up anew with the hoe and spade. When the vines once start to run, do not allow them to take root; this may be prevented by lifting them with a hoe-handle.

Tomatoes.—If the rot appears, cut away and destroy the affected fruit. The cause is not yet ascertained. If, as is possible, it is due to a fungus, this will tend to check it. Keep the vines tied to the trellis.

Turnips.—The Ruta Baga sorts may still be sown very early this month. For table use, none are equal to the "Long White French," though it is not so large as some others. Give rich soil, use a plenty of seed, and thin early. The Yellowstone and Aberdeen may be sown during the month.

Watermelons.—The insects that attack squashes, melons, and others of the family must be fought. Those marauders who look upon watermelons as common property, often save one the trouble of deciding when the watermelon is ripe. Having been troubled by "vermin" of this class, we one year put up a conspicuous sign to this effect: "Caution! Those who take melons, must be careful to select those which have not been poisoned." No melons were missed that season.

Weeds.—When a crop is removed, do not allow the land to grow a crop of weeds. It may be sown to buckwheat, peas, or other plant that will smother the weeds, the crop to be plowed or spaded under before frost.

Poultry Raising as a Business.

BY P. H. JACOBS.

Those who contemplate raising poultry on a large scale, must divest their minds of the idea that it is an easy and pleasant occupation; yet it is so, compared with ordinary farm operations, although much hard work must be done, and many failures are to be expected. As managed on most farms, poultry is not profitable, simply because no attention is paid to breeds, shelter, or feeding. The eggs are gathered wherever they can be found, the chicks are surrendered entirely to the hens, and feeding varies from twice a day to once a week, according to the inclination of the person in charge.

A flock of ten hens can be comfortably kept in a yard, 20 feet wide by 50 feet deep. An acre of ground will contain forty such yards, or 400 hens. No cocks are necessary unless the eggs are desired for incubation. To estimate $1.50 as a clear profit from each hen, is not the maximum limit, but the profit accrues according to the management given. Poultry thrives best when running at large, but this applies only to small flocks. Hens kept by the hundred become too crowded while at large, no matter how wide the range, and sickness and loss occur. Large flocks must be divided, and the size of the yard required for a flock, is of but little importance compared with that of the management. There is much profit to be derived from the sale of young chicks—and, where one pays attention to the business—they receive the greatest care. Each brood, like the adult, is kept separate from the others, in a little coop, which prevents quarreling among the hens, and enables the manager to count and know all about the chicks. This is very important, as there are many farmers who hatch scores of broods and yet cannot tell what became of two-thirds of them. Hawks, crows, cats, rats, and other depredators take their choice, and the owners are no wiser. Each sitting hen should be in a coop by herself, and each coop should have a lath run. The critical period is the forming of the feathers, which calls for frequent feeding, and when they have passed that stage, the chicks become hardy. The houses need not be more than eight feet square for each family, and can be doubled. If possible, it is best to have changeable yards, but, if used, a less number can be kept to an acre. If the yards are kept clean by an occasional spading, however, green stuff may be grown elsewhere and thrown over to them. This may consist of cabbage, grass, turnip tops, kale, mustard, lettuce, etc. Watering must not be neglected, or the meals given irregularly. Care must be observed not to feed too much, as over-fat fowls will lay but few eggs, and such eggs will not hatch. A good poultry manager is always among his fowls, and observes everything. The breeds have special characteristics also. The large fowls must be hatched in March, if early pullets are desired for winter laying. This applies to Brahmas, Cochins, and Plymouth Rocks. If the manager finds this impossible, he should at once substitute cocks of the Leghorn breed, which, crossed with large hens, make good marketable chicks, and produce pullets that mature early. A knowledge of the characteristics of the several breeds is indispensable to success. Crossing pure-bred cocks with common hens is excellent, but "fancy poultry" is not profitable to any but those who understand thoroughly the mating and selection of the several breeds.

Is it a suitable occupation for ladies or delicate persons? is an oft-repeated inquiry. The ordinary work of throwing on the ground a few bushels of corn weekly and gathering the eggs seems an easy matter, but to keep large numbers, there is the additional work of cleaning, watering, regular feeding (early in the morning), closing at night, attending to the chicks, and marketing the produce. In winter, very often, there are places from which the snow must be shovelled, to say nothing of hundreds of little vexations, that occur at all seasons. There is plenty of work to do: fences to repair, leaks to stop, and filth to remove. Yet, if there is a strong boy to assist in the harder labor, there is no management superior to that which a careful lady usually bestows, she often being more observing than her husband.

System is an essential feature. This means regularity and promptness, with all the details well arranged. Precautions must be taken against preying animals, and for the eradication of vermin. Watch the fluctuations of prices, and seek the best markets. The same systematic method should be carried out in attending to many flocks as is usually bestowed on one, for by sub-division the management becomes easier.

THOSE who are fond of rhubarb are reminded that it may be canned for winter use in the same manner as fruits. If this has not already been done, the winter's supply ought to be put up at once, as the gathering should soon cease, and the plants allowed to grow and gain strength for the product of next spring. In canning, the rhubarb is stewed as if for the table. Sugar may be added or not; it is not necessary for its preservation, but many think it is more convenient to add it at once, otherwise the rhubarb has to be heated before it is used, in order to properly incorporate the sugar. The hot rhubarb is filled into the jars in the same manner as stewed fruits, and the covers put on at once. Before placing away, try if it is possible to screw down the corks still tighter. In gathering rhubarb at this season, select the newer stalks, as the outer and older ones are apt to be tough.

A House Costing $2,500.

We present in illustrations 1, 2, 3, 4, and 5, plans of a house, containing ten good sized rooms, a large veranda—costing $2,500, and presenting a neat and attractive appearance. The building is of Queen Anne style, now becoming so very popular, and makes a very handsome and commodious residence for town or country. The general arrangement was suggested by a woman, who determined to dispense with the conventional main hall and stairway, occupying the most prominent place in the the front part of the house, and provided instead, a vestibule entrance outside the house, from a part of the veranda. This puts the stairs in a less conspicuous place, with approaches from two directions at the foot, thus making them serve equally well for general or family use from the main house, and as a private stairs from the rear extension.... **Exterior** (figs. 1 and 2).—The outlines are angular, and somewhat picturesque. The body is two feet above ground, and but a few easy steps are required to reach the entrances from the outside. The extensive veranda and other projections afford protection from storms to the windows and entrances, besides affording desirable shade. The roofs are of dark slate, one-third of those on the main roof being pointed and laid in belts. A cresting of ornamental iron is set along the main ridges, and, when properly connected with ground rods, serves to protect the building from lightning. The window openings have a single light of plain glass in the lower sash, and several smaller tinted lights in the top one. The tinted glass, in a variety of colors, produces, with little cost, a very cheerful effect, both outside and inside.... **The Cellar** equal the first story in area. It has an outside entrance, five windows, and stairs leading to the first story. Hight of ceiling, 6½ feet.... **First Story** (fig. 3).—The hight of the ceilings is 10 feet. There are four good-sized rooms, each with outlooks at their sides and ends. The main entrance is from the front veranda, through a good-sized and pleasant vestibule, which is lighted at the side by a cluster window of tinted glass, and has side and end doors opening to the parlor and sitting-room. The parlor has four windows facing three directions, each protected from storms, and agreeably shaded by the veranda. There is a large open fire-place, and doors communicating with the sitting and dining-rooms. The sitting and dining-rooms adjoin each other through sliding-doors, which admit of their being used together, as occasion may require. The kitchen is convenient, well-lighted, has a large fire-place, with range, and adjoins a pantry. The rear entrance, or porch, is also reached through a door from the sitting-room. The stairs to the cellar and to the second story are placed between the dining-room and

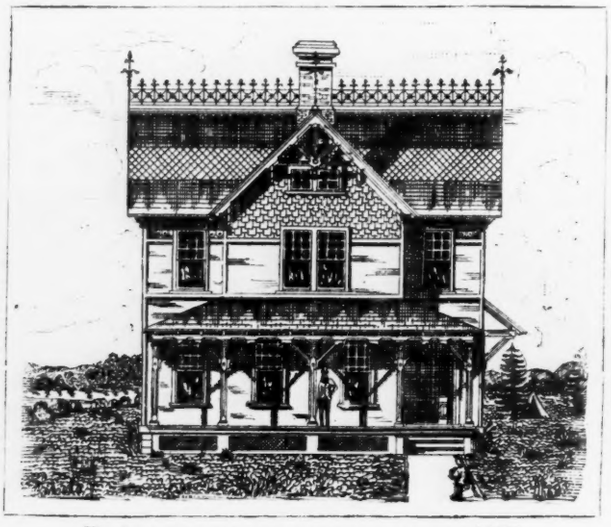


Fig. 1.—FRONT ELEVATION OF HOUSE, COSTING $2,500.

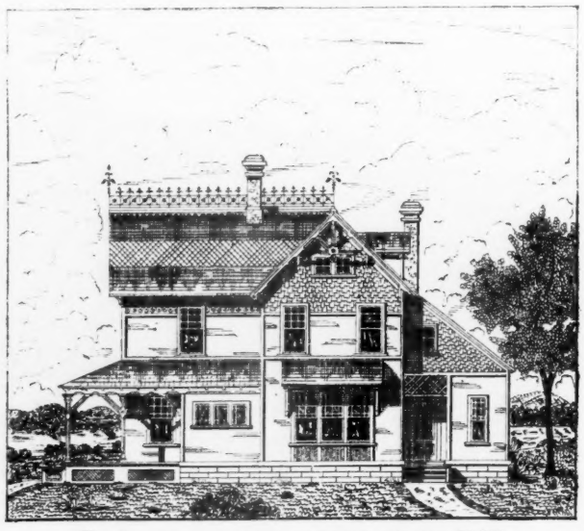


Fig. 2.—SIDE ELEVATION OF HOUSE, COSTING $2,500.

kitchen, and may be reached from each direct.... **Second Story** (fig. 4).—Hight of ceiling is 9 feet. This story has a central hall, three chambers, three closets, and a trunk-room. The stairs to the attic are placed above those of the first story ...**Attic** (fig. 5).—Hight of ceiling is 3 feet at the plates or sides, and follows the rafters to the full hight of 7 feet. A hall and three chambers are finished on this floor, with the doors and windows placed in the center of the ends of each. ....**Construction.**—The foundations and chimneys are of hard brick, laid in good mortar. The frame is of sawed spruce; with siding, for the body, of clapboards laid on thicknessed sheathing and building felt. The gables and frieze courses are of red-wood shingles, also on sheathing. The main roof is of dark slate, laid on sheathing and tarred felt. The veranda roofs are also of slate, laid on inverted pine flooring. The flooring outside is of 1¼ by 4¼-inch T and G pine; inside, of 1⅛ by 7-inch T and G spruce. The windows have plank frames, with 1¼-inch sash, glazed with second quality French glass. The doors are of seasoned pine, panelled and molded. The inside finish is clear pine, reeded, with blocks. The inside walls and ceilings are hard-finished on two coats of brown mortar, and the principal rooms of the first story have neat stucco cornices. The painting is two-coat work, of selected colors.

Estimate.—Cost of Materials and Labor.

160 yards Excavation, @ 25c. ₱ yd.	$ 40.00
15,000 Brick, Foundation and Chimneys (complete), @ $15 ₱ M.	225.00
82 feet Blue Stone, Steps and Sills, @ 30c. ₱ ft.	9.60
1,000 yards Plastering, @ 30c. ₱ yd.	300.00
210 Stucco Cornices, @ 20c. ₱ ft.	42.00
5,000 feet Timber, @ $20 ₱ M.	100.00
100 Joists, @ 16c. each.	16.00
250 Wall Strips, @ 11c. each.	27.50
4,500 feet Sheathing, @ 3c. ₱ ft.	135.00
450 Clapboards, @ 16c. each.	72.00
21 bunches Shingles, @ $1.50 ₱ bunch.	31.50
24½ squares Slate, @ $9 ₱ square.	220.50
950 feet Outside Flooring, @ 5c. ₱ ft.	47.50
2,650 feet Inside Flooring, @ 4c. @ ft.	106.00
5 Cellar Windows, @ $3 each.	15.00
23 Full-sized Windows, at $8 each.	184.00
11 Half-Windows, @ $5 each.	55.00
29 Doors, at $7 each.	203.00
3 Stairs, @ $10 each.	30.00
Veranda and Porch finish.	50.00
5 kegs Nails, @ $4 each.	20.00
4 Closet finish.	20.00
Mantels.	30.00
Tin Gutters and Leaders.	20.00
Carting.	20.00

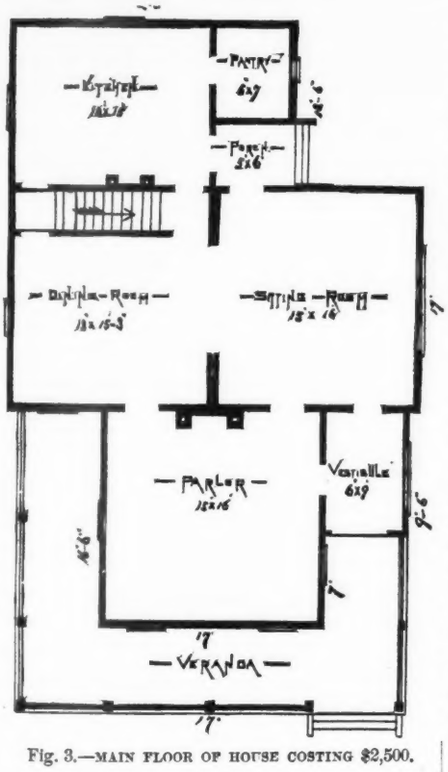


Fig. 3.—MAIN FLOOR OF HOUSE COSTING $2,500.

Painting.	180.00
Carpenter's labor (not included above).	240.00
Pump, Sink, and incidentals.	60.00
Total, complete.	$2,500.00

Application of Plant Food.

BY PROF. J. W. SANBORN, AGRICULTURAL COLLEGE OF MISSOURI.

In the April number I gave the results of trials of manure plowed under, versus manure surface

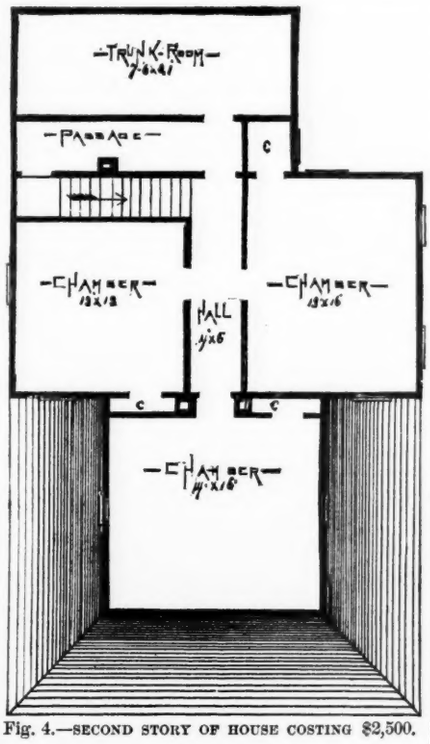


Fig. 4.—SECOND STORY OF HOUSE COSTING $2,500.

applied. These results were contrary to my expectations and the common belief; and I know of no similar trials on record, as these covered several years and different crops. I question the correctness of present reasoning upon the surface application of manure. This reasoning is founded partly upon English research and opinion; it is borrowing facts formed under one set of conditions, and applying them to another. The rainfall of England is less than that of our country, but the number of cloudy and rainy days very much exceeds that of the United States. One of the effects of our dryer atmosphere is an increased evaporation, and the leaching of water into the subsoil is less here than in the mother country. The tests of percolation by both Stockbridge and Sturtevant, on open sandy loam, or gravelly soil, has shown but little over one-half the inches of water of percolation, found by Lawes on heavy retentive soil. Our land is frost-locked for five months of the year, months in which percolation is active in England, as shown by J. B. Lawes investigation of fall-applied chemicals, versus spring-applied. While we have but little percolation of water on our more compact soils, it is to be remembered that this little does not occur to any noteworthy extent, during the growing season; in fact, the trials make it probable that during June, July, and August, evaporation exceeds rainfall. The application I would make of these facts is, that the upward movement of water in the soil, may at times exceed the downward, and instead of the manure, when plowed under, moving from the surface roots of plants, it may pass towards them. The upward and downward movements of water, caused by rains and capillary attraction, to supply surface water for evaporation, causes a slight movement of soluble materials of the soil, but with less loss of nitrogen in volatile compounds when plowed under. It is generally claimed, on the basis of Vœlcker's noteworthy investigations, that manure exposed does not lose nitrogen by escape into the air. Dr. Vœlcker's trials never showed that there was no loss, but only a small loss of nitrogen from covered manure. I do not claim much loss of nitrogen from exposed manure, by escape into the atmosphere, or from manure in the soil near its surface. It is well understood that nitrogen is dissipated into the air from the surface of tilled ground. Under favorable conditions (without presenting a long array of facts), I believe that my trials were careful and extended enough to warrant calling in question the present views regarding the application of manure, as far as heavy clay loams are concerned. Thus far, in speaking of surface application of manure, I have had reference to manure harrowed into the surface of plowed ground. I have considerable experience in top-dressing grass lands with most sorts of manure, chemicals, and indirect agents of plant nutrition, like lime, plaster, etc., and with all of these have failed to obtain satisfactory results. The fact is more clear to my mind, than the reasons why. I have seeded down large areas to grass, at different seasons of the year, and am confident that the commingling of the manure with the earth has been far more economical than surface fertilization on the unbroken sod. New roots from seeding and stirring of the soil may be factors in the case. Entire surface application may have a tendency to induce too superficial a rooting of plants. The best results that I have observed from surface use of manures for grass, have been upon moist soils. It is only upon fields difficult to till that I would be induced to use manures (in our climate) without first breaking up the ground.

Do apples, of different varieties mix by means of their pollen? In Wisconsin a number of years ago, a neighbor had a Yellow Bellflower and a Russet, standing so near together that their branches nearly touched. One autumn I helped gather the apples, and we found the fruit on the adjacent sides of the two trees to be mixed very evenly throughout the body of the apple. Those on the Bell-flower tree were tinged with the brown color of the Russet, and the flesh partook of the Russet flavor, and was firmer in texture than the true Bell-flower. Those on the Russet tree were thinner skinned than the true Russet, tinged with light yellow, and the flesh had somewhat the flavor of the Bell-flower. The fruit on the sides

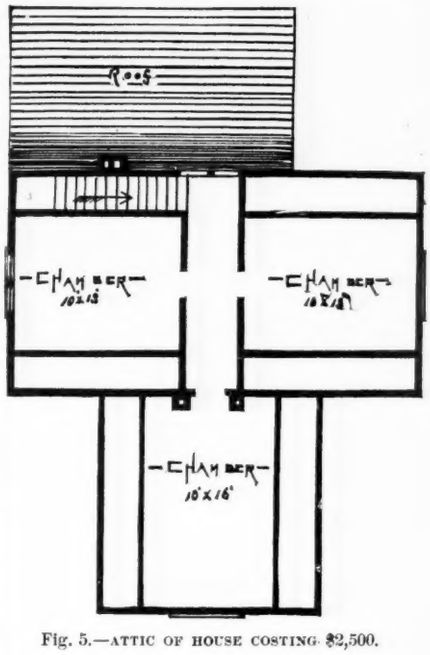


Fig. 5.—ATTIC OF HOUSE COSTING $2,500.

of the trees farthest from each other, were true, each to its own kind. It did not occur to me at the time, to examine the seed-vessels to see if they were changed in form; but there is no doubt in my mind that the pollen from the two apple trees was mixed. J. E. B., ROCKPORT, D. T.

Learn to Catch Your Own Trout.

The labors of Seth Green, Roosevelt, and others interested in preserving and perpetuating our best fish, are rapidly restocking our trout streams, and every farmer who has a running brook on his place can now, at very little expense, have trout of his own to order. The farmer boy looks with wondering admiration at the fly-casts of his city cousin, who has come to the country for his July vacation, but if he will give a little time and attention, he can very soon acquire the art of fly-fishing, and excel his cousin, for he has more strength in his arm and more endurance generally. Here what David Foster, to whom we referred last month, has to say:

It is a well established axiom that in skillful casting lies the chief condition of success. "He can throw a good line," is equivalent to asserting the proficiency of a rodster, whether he be fly, mid-water, or bottom fisher. The ordinary routine cast is the first to be practised and acquired by the tyro. This is accomplished by bringing round the rod so as to describe a half circle from over the left shoulder, and delivering it directly over the right, the action emanating from the wrist and elbow only. It is capital practice for the young student to cast upon a lawn or any closely-cut turf. Line to the length of the rod should first be delivered efficiently and neatly, when a hat should be placed as the receptacle of the fly; after the distances have been lengthened at intervals, a tumbler may be substituted, and finally a small wine glass. When these different exercises have been successfully accomplished, with a fair length of line, the rodster may safely try his hand upon the bosom of the watery element. Lightness and precision follow practice and experience.

Care and patience in execution are required, after the rudiments of the art have been acquired; a non-observance of these is sure to materially interfere with sport. Perseverance is all very well in its place, but when unaided by the exercise of due care and tact in presenting the lure, it will meet with small result. The tyro should therefore practice assiduously, ever bearing in mind that much as he may admire and aspire to a nearer acquaintance with the scaly beauties, they are coy and ungrateful. The instant they become aware of his paying them the least attention, they move contemptuously away; and no matter how lovingly he drops them a line, all further correspondence is thanklessly declined. It behooves him, therefore, to keep out of sight as much as possible, never allowing the sun to extend his shadow across the stream, always also avoiding conspicuously bright clothing; for notwithstanding the naturalist's persistent assertions as to the dullness of the eyes of fish, owing, it is affirmed, to the skin of the head covering the pupil of the eye, the trout fisher knows very well that in their own element they habitually exercise the most keen and discriminating powers of vision, when the water is clear; and any moving or brightly-colored objects outside it attract their attention.

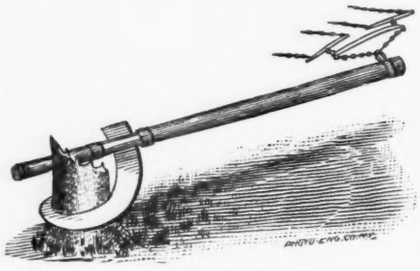
An accurate estimate of the elasticity of the line, etc., should be possessed, and the striking motion accelerated or modified accordingly. The action requisite is a short, quick, wrist-motion, commenced sharply, but ended almost instantly and abruptly, like a quick movement of the hand in bringing a foil in fencing from tierce to carte. The hand holding the rod is turned upwards and backwards, whilst the arm is stationary when a short line is out, the movement being lengthened when the intervening line is either long or loose. One of the greatest charms of fly-fishing lies, undoubtedly, in the comparative absence of routine and sameness. The plier of the rod must adapt himself to ever-changing circumstances.

Never play a trout against a stream, as by that means an additional weight is thrown upon the line and tackle, which in all cases is particularly undesirable, as in the event of the tackle holding to its tether, there is danger of the fish being forcibly torn away from the hook. A small fish drawn against the stream, strains the tackle inconceivably. Whenever a fish makes for weeds, roots, or submerged timber at the rodster's side of the river, do not potter with the reel, but haul in the line by the left hand, allowing it to fall at the feet. Wherever weeds are most prevalent in a trout stream, there the best fish congregate. Like pike, they love to secrete themselves in the green shades of aquatic vegetation, from whence they can dart upon their unexpecting prey. Whenever surface food is sufficiently tempting, they leave their cover, generally rising upon the less frequented side of the water, where they have still the full benefit of the weed beds which intervene between them and their would-be captors.

Fly-rods are made of many different woods and dimensions. It is a noteworthy fact, however, that during the two centuries that have elapsed since Cotton first wrote upon what afterwards developed into the most artistic and scientific branch of angling, the length of the fly-rod has diminished by more than one-half. Notwithstanding this diminution of size, and we may also add, of weight, the casting powers of the rodster have been so much augmented, that almost double the distance may now be neatly covered by the adult adept than was effected with the unwieldy weapons of our forefathers. The propelling power of the fly-rod depends largely upon the material of which it is constructed. The fine-grained woods of the tropics exceed our own in point of strength, durability, and weight-sustaining powers.

The line should be plaited of water-proof silk. The eight-plait water-proof fly lines have gradually, during the last forty years, superseded the old hair, as well as the hair and silk lines.

The rod for pike is now made little more than one-half the former dimensions; the cumbersome tool of from fifteen to twenty feet is being discarded in favor of a more efficient implement of about nine or ten feet. The old swing movement for getting out the bait is quite surpassed by what may be termed the spring motion; the fisherman's right angle is reduced by this change, his general style and comfort vastly improved, and success rendered more sure. The very largest fish are held more under control and are much more easily landed when a short and sturdy rod is employed.



A Stump Puller.

The stump puller herewith illustrated is very simple, consisting of a stout bar and a heavy hook. The iron parts can be made by any blacksmith.

THERE is great loss every season by individuals owning wood lots, and to the public, from carelessness or design in handling fire. In the summer drouths, the leaves and fallen limbs become like tinder, and the cigar stump or emptied pipe, the brands from a camp-fire or pic-nic party, are enough to kindle a great conflagration. Fires are often started from the sparks of a rail road engine, from carelessness in burning brush, or from mischievous boys, just to see the blaze. There is much loss to the owner of the forest burnt over, in trees killed, in fuel and fences consumed, and in the vegetable wealth of leaves and mould burned and dissipated. The forest does not recover, as when it is cut with the axe. It remains for years a blackened desolation in the landscape. In most cases, the whole neighborhood suffers from the reduction of the area of forest, already too small to husband the rain fall, and protect the springs and rivulets, that feed the rivers. This great public evil should have the immediate attention of all our law makers.

Pussley or Purslane.

With the hot days comes the weed, which calls for active and thorough work. Those who are particular as to their speech, call it purslane, but every gardener knows it as "pussley." The weeds of earlier months could be kept in subjection, when small, merely by the use of a rake; when uprooted, they would shrivel and die. Give pussley this treatment and it does not die at all, but takes root anew, and thrives all the better for the transplanting. Nothing but hoeing up and carting off will answer. Though such a pest, it has its uses. Pigs are fond of, and will thrive upon it, and it is excellent green food for poultry. Indeed it is not to be despised as a table vegetable, when cooked and dressed like peas, with milk and butter. Did it not force itself upon us, we should no doubt cultivate it with as much care as do the French gardeners, who, besides the common form, have three distinct varieties, the "Green," the "Golden," and the "Large-leaved" *Pourpier*, which is the French for "Pussley."

The Tent-Caterpillar.

One of the most destructive enemies of the apple orchard is the Tent-caterpillar (*Clisiocampa Americana*). These worms swarm in the unpruned nurseries and neglected orchards of such farmers who think the planting of trees is the main thing in securing fine fruit. They hang out their webs upon the wild cherry trees that grow along the walls and by the road side, and are quite as fond of the cherry leaves as of the apple. Some farmers who look after the enemy in their orchards do not seem to fear their depredations in the wild cherry trees, which are prolific nurseries of the caterpillars, and will, if untouched, thwart all efforts to keep their apple trees clean. The eggs from which the worms are hatched are glued around the young branches, generally near a fork, forming a large patch or ring of several hundred eggs, covered with a coat of waterproof varnish. The caterpillars are hatched with the opening of the leaves of the wild cherry and the apple. They are very regular in their habits of feeding, and retreat to the nests for shelter and protection from cold and wet. The moths appear in great numbers in July, sometimes entering houses by night, attracted, doubtless, by the lights. This instinct which leads the moths of injurious insects to seek the light at night, makes them an easy prey to the orchardist or gardener, who may kindle brush fires to destroy them, or set a lamp with a large flame to burn their wings. They lay their eggs at this season, and every moth destroyed is a reduction of the reproductive force of the enemy. They select the wild cherry on which to deposit their eggs, if one is to be found in the vicinity, and it is probable that this was the main support of this insect before the first settlers introduced the apple. If carefully watched, the wild cherry trees will serve as traps to catch this pest of the apple orchard, but neglected trees are only a breeding place for the caterpillars. The patches of eggs are easily removed from nursery rows and recently planted apple orchards, by crushing them with the thumb and finger at any time after the leaves fall, when they are readily seen. For the larger trees, the best time to attack this enemy is in the early spring, at the morning hour, soon after the worms are hatched. They will then be found sheltered in the small silken tents which give the name to the insect, and may be destroyed by applying a torch at the end of a pole to the nest, or by dipping a brush in kerosene oil and removing the nests. A few hours' work at this season will effectually clean an orchard. Wherever there is a farmers' club established, and concerted action can be obtained, it will not be very difficult to route this insect enemy and have clean orchards.

Bee Notes for July.

Apiarists are now in the midst of the honey harvest. The white clover is hardly gone, the incomparable sweet clover is yet in bloom, and the basswood flowers are opening stores of enticing nectar. Beekeepers who are working for comb honey should furnish abundant sections, that the bees will not lack room. Crowding at this season means swarming and loss. If the finest honey is desired, the sections must be removed as soon as filled, and capped over. If extracted honey is the aim, it should be extracted frequently. In no case should this be deferred longer than when the bees begin to cap over the honey. Extracted honey should always be kept in a dry, warm atmosphere, and then even thin honey will ripen and be equal to that which was capped over by the bees. The different grades of extracted honey should be kept separate. Clover, raspberry, and basswood honey are all so much alike that, to mix them, will do no harm; but never should the dark nectar of autumn be mixed with the light honey of summer. Higher prices will be obtained by keeping each kind of honey by itself.

THOUGHTS ON WINTERING.

The wise apiarist meditates even in summer on the best plans and practices for winter. On the 5th of last October all our bees were ready for winter. Each colony was crowded upon eight Gallup frames; given 30 lbs. of good capped honey, and was surrounded above and at the ends by sawdust cushions. All not intended for the cellar were put into chaff hives. One hive intended for the cellar was only given frames containing pollen, though in addition there was abundant honey. On November 14th, all the hives were weighed, and ten single walled, and three chaff hives were removed to the cellar. Four colonies in chaff hives were left on the summer stands. The temperature in the cellar ranged from 38° F. to 42°. On April 5th they were examined, and those in the cellar were removed to the summer stands. The four colonies out-of-doors had consumed 58 lbs. of honey, or 14½ lbs. each. One of these was dead; having "starved," as a bystander remarked, "in the midst of plenty." The combs on which the cluster was gathered were entirely empty, while those to the right had abundance of honey in them. The other three colonies wintered out-of-doors had lost a great many bees, so that few were left. These have done well since and are now very strong.

Of the thirteen colonies in the cellar one had starved. We suppose it had been robbed of its honey before it was placed in the cellar. All its honey was gone. The colony given the combs containing pollen, were nearly all gone with dysentery, the only one of all thus affected. No other had any pollen. The other colonies from the cellar were all strong, with very few dead bees, and had eaten 4½ lbs. to the colony. The cellar had water running through it, was dark, uniform in temperature, and well ventilated. There has been no spring dwindling, since the colonies were set out of the cellar.

We can see no difference between the colonies in the chaff hives from the cellar and the others. Some of the very best are in the single-walled hives. All in such hives are well covered above and at the ends of the brood chamber with sawdust cushions, and are confined by use of a division board to only as many frames as they will cover.

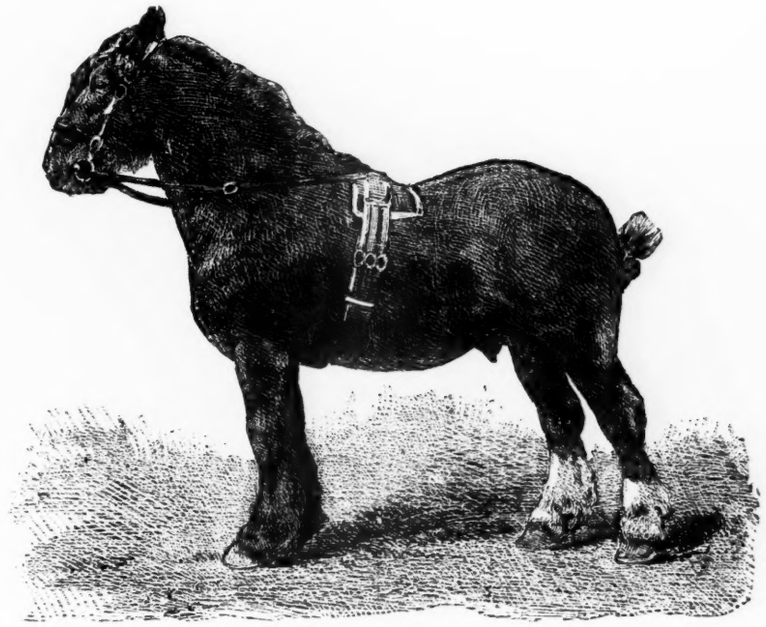
LAST spring I sowed cabbage seeds of two varieties, Early York and Late Drumhead, in the place where they were to grow. They grew and flourished, being ready to gather long before any frost appeared. Still they were late, from the market gardener's point of view. I also planted Tomato seed in the same way. They grew rapidly, and had no set back whatever, until the fruit matured; while transplanted ones were at a stand still for some time until they became rooted in the new place, and many of them died. But the fruit of the former matured much later than of those started in the house. The conclusion is drawn, from these facts, that planting in the garden is to be preferred, for late maturing, of both cabbages and tomatoes. L. G.

Duck Raising.

Ducks are suspected of being the least remunerative of all varieties of poultry. The general impression among farmers is, that a pond or brook is essential to the raising of ducks, or other water fowls. They may be raised, however, for the supply of the table without more water than the common dunghill fowls. Ducklings want water to drink just as chickens do, and probably enjoy larger license for swimming, but it is not essential to their health while growing. A well grown duck of any of the larger varieties, Pekin, Rouen, Aylesbury, or Cayuga, is one of the greatest delicacies that comes to our table, and we could not consent to be without it, at any reasonable cost. Roast turkey is an epicurean delight, but we do not want it every week. Chicken pie is good enough in its place, but a change to roast duck after the holidays is appetizing. Every country gentleman who means to live generously, and entertain his friends with the best the rural districts afford, should patronize ducks. We have raised them with entire success in a village yard, and they can be made a paying crop wherever hens will flourish. We place the Pekins at the head of the popular varieties, considering their hardiness, the delicacy of flesh, and their great laying qualities. The first bird imported of this variety, laid over two hundred eggs in a year, and it is not unusual to have the ducklings commence laying in the fall—instead of waiting until the following spring—as is the general rule with other varieties. The Rouen, Aylesbury, and Cayugas are fine breeds, and under favorable conditions give fair returns for the labor and food spent on them. Ducks can be raised unquestionably with most profit near water, swarming with fish. Persons located upon tide water coves, have the best facilities for raising water fowls. These coves are frequented by fish for the purpose of spawning, and the young fry linger through the spring and summer in the shoal water to gather their food. Every tide brings in fresh supplies of food for the ducks, and after the first month of confinement in the yard, the keeping of the ducklings costs very little, until they are four or five months old, when they generally bring their highest prices in the districts that supply the city markets. Ducks are not without their æsthetic value. The Cayuga drake has brilliant plumage, and the male of the wood duck, though small, is among the finest water fowls that have ever been domesticated. The Pekins and Aylesburys are the most desirable to raise, where there is a large range for them in tide waters and lakes, as their white color distinguishes them from the wild ducks, and guards them against the shot of the sportsman. They are pleasing objects upon any small body of water in private grounds, and add to the variety and profit of the poultry yard.

A Prize Clydesdale.

The engraving herewith presented is from a photograph of the famous Clydesdale stallion "Spark," first-prize winner at the late Horse Show at Islington, England. The efforts, which have been systematically and patiently conducted for many years, tending to the "ennoblement" of the "old English draft horse," without a decrease of size, are bearing fruit in the production of families of extraordinary size and merit. The normal color of the race is black, and the "blacks" have been greatly improved of late; but there is a family of big "grays" in the "midland" districts which are regarded as distinct from the horses of the eastern coast. To this family "Spark" belongs. The standard color will probably develop with his years, and may be expected to prevail more or less in his get, but that is of small moment. No one objects to the Percherons because they are gray. What is wanted in a draft horse is a combination of power, willingness, activity, soundness, and constitution. We gain power as we secure size and weight, provided we have good form and willingness to exercise it. Hence those characteristics dependent upon the nervous, and, so to speak, moral qualities, are most important. The improvement of the great English draft horse has been steadily tending in this direction, as well as to greater compactness of frame, and, in every way to that superior form, well shown in the portrait given.



THE FIRST-PRIZE ENGLISH CART HORSE "SPARK."

Mildew on the Grape Vine.

Grape Mildew makes its first appearance as whitish patches on the underside of the leaves. Soon after, the upper surface directly over these spots turns yellowish. After a while, that portion of the leaf turns brown, dies, and breaks away, leaving a hole. The mouldy appearance may, later, appear on the young shoots, on the stems of the fruit clusters, and on the fruit itself. Whoever has a vine, should be on the watch for the whitish blotches on the leaves, and at once arrest the trouble by the use of the proper remedy. Mildew is an exceedingly minute plant, so small that its parts can only be seen by the aid of a powerful microscope. In April last (page 181) there was given an account of the potato rot; it was shown, that this disease was due to a microscopic fungus, which lived in, and fed upon, the leaves of the potato plant. A magnified illustration of the plant was there given, showing the manner in which it

grows among the cells of the potato leaf. Mildew of the grape is due to a minute plant which, in a similar manner, lives within the substance of the grape leaf, and, like that, it belongs to the immense class of plants, known as *fungi*. Mildew became so destructive in European vineyards, that before a remedy was found, whole grape-growing neighborhoods were depopulated. At last it was discovered that the fungus could be completely controlled by the proper use of sulphur, and where this is systematically applied, mildew is no longer dreaded. While the mildew common in this country is not precisely the same plant as that so destructive in Europe, it is controlled by the same treatment, and the use of sulphur is now common in American vineyards. A bellows invented in France for the application of sulphur, is now in common use here. It is a strong, small bellows, provided with a wide tin nozzle (*a*), which curves at the end, and is terminated by a flaring portion, as shown in the figure. The bellows has not, like the ordinary kitchen implement, a valve or "clapper," but a hole (*b*) at the upper side, an inch and a half in diameter, closed by a cork. At the end of the nozzle is a piece of wire gauze, to prevent lumps of sulphur from being blown out. A convenient quantity of sifted flowers of sulphur is introduced by means of the hole, which is then tightly stopped by the cork. Working the bellows with short, quick strokes, will cause the sulphur to be blown out as a fine cloud of dust. As the air is drawn in as well as expelled through the nozzle, the sulphur is kept from clogging it, and one can soon learn to fill the air near the vines with a dust of sulphur, which settles on every part of them. The nozzle being turned up, it allows the sulphur to be blown upon the underside of the leaves, which is important. In vineyards, sulphur is applied at regular intervals, the times depending upon the locality and season. The application is made on a still day, and should a rain occur soon after, it is renewed. Bellows of this kind are sold at the implement and seed stores, and in a large vineyard several are kept in use. If one has but a few vines, he may not care to purchase such a bellows. A substitute may be found in what is called in Europe the "Grape-vine Torch." This is a convenient tin vessel, with a handle; the bottom is covered with fine wire gauze, and the top has an opening for introducing sulphur, closed by a cap. Sulphur being placed in the "Torch," which is much like a dredging-box or large pepper box, it may, by a proper use of the implement, be shaken out to form a cloud of dust, though less easily and effectively than with the bellows. Those who possess such a relic of the past as a kitchen bellows, can convert it into a substitute for the French pattern. The small nozzle should be replaced by a curved tin one, across the mouth of which may be placed a piece of wire cloth, though this is not essential. The usual valve or clapper should be cut away (letting it remain inside, unless the leather is partly removed to allow it to be taken out), and the opening fitted with a cork. It is well to sift the sulphur, to remove all lumps, before putting it into the bellows, and where much is to be used, to contrive some convenient way for renewing the supply in the vineyard. The application is made on the first appearance of mildew, and repeated every few days so long as any new patches are discovered.

Trade and Agricultural Value of Fertilizers.

The trade value of a fertilizer is not necessarily proportional to its crop-producing power, in any especial case, and varies with the state of the market. The following Table gives the New York prices for potash, phosphoric acid, and nitrogen, the three leading elements of commercial fertilizers. These prices have been agreed upon by Professor S. W. Johnson, Director of the Connecticut Experiment Station, Prof. C. A. Goessman, State Chemist of Massachusetts, and Prof. G. H. Cook, Director of the New Jersey Experiment Station.

Nitrogen in nitrates	20c. per pound.
Nitrogen in ammonia salts	26c. " "
Nitrogen in Peruvian guano, fine steamed bone, dried and fine ground blood, meat, and fish superphosphates, and special manures	23c. " "
Nitrogen in coarse or moist blood, meat, or tankage, in cotton seed and castor pomace	18c. " "
Nitrogen in fine ground bone, horn and wool dust	17c. " "
Nitrogen in fine medium bone	15c. " "
Nitrogen in coarse medium bone	13c. " "
Nitrogen in coarse bone, horn shavings, hair, and fish scraps	11c. " "
Phosphoric acid, soluble in water	11c. " "
Phosphoric acid, reverted and in Peruvian guano	8c. " "
Phosphoric acid, insoluble, in fine bone, fish guano, and superphosphates	6c. " "
Phosphoric acid, insoluble, in fine medium bone	5½c." "
Phosphoric acid, insoluble, in coarse medium bone	4½c." "
Phosphoric acid, insoluble, in coarse bone, bone ash, and bone black	4c. " "
Phosphoric acid, insoluble, in fine ground rock phosphate	2¾c." "
Potash in high grade sulphate	7c. " "
Potash in low grade sulphate and kainit	4½c." "

It is seen that, commercially, nitrogen is the most costly of the three substances, and ranges from 26 cents per pound in the very soluble ammonia compounds to 11 cents in coarse bone, horn shavings, etc., from which it is only slowly dissolved and made available to growing plants. Phosphoric acid stands next, and varies in price from 11 cents to 2¾ cents, according to its solubility. Phosphoric acid, soluble in water, is the characteristic ingredient of superphosphates, and is produced by the action of sulphuric acid on the insoluble phosphate. Reverted phosphoric acid is that acid which was once soluble, but from some chemical change has become insoluble in water. It is much more readily assimilated by plants than the insoluble acid, strictly so called, and therefore has a higher price. The crude rock phosphate from South Carolina stands lowest on the list. There is not so much difference in the value of potash in its various forms.

The agricultural value of a fertilizer is measured by the crop it will produce, and must therefore vary with the conditions under which it is placed. The effect of a fertilizer depends largely upon the kind of crops, character of soil, the weather, tillage, and many other varying circumstances, so that the crop-producing power of any special manure can only be determined in a general manner, and this must be upon a larger number of trials in various places, entending over several years. All who use fertilizers should distinguish between the two values pointed out. In the market the three most important ingredients of plant food have established values, which vary but little from year to year. These substances may be worth more or less than the market price to the farmer as a means of producing larger crops. Until all the varying conditions of soil, seed, weather, etc., are reduced to a certainty, no one can foretell the exact agricultural value of any commercial fertilizer. The farmer must count the cost in dollars and cents, estimate the probabilities founded on experience, and then try and know.

The Thumb and Finger.

Nothing is more characteristic of the novice in gardening than a reluctance to use the knife. Many seem to fear that they will cause pain, and will no more cut their pet plants than they would amputate the limbs of their pet animals. Those who give proper attention to their plants, whether soft-wooded, or shrubs and trees, can avoid nearly all cutting by anticipating the need of it. The shoots of all hard-wooded shrubs and trees are, at first, in their early growth, as tender as those of a geranium. These shoots of summer will, by autumn, have ripened and become as hard as the rest of the tree or shrub. Take a favorite pear tree, for example. If left to itself, there will be found, when the leaves fall, shoots that are not wanted, but which, as they make a thick and crowded head, must be cut out. Had these shoots been entirely removed, or kept short by pinching off their tips in the summer, there would have been no need to use the knife. Not only fruit trees, but flowering shrubs, can be greatly benefited and kept in shape, if the owner who works among them will make timely use of the thumb and finger to pinch off the growing points of all shoots that push where branches are not wanted. The same is true of soft-wooded plants. A timely pinching of the shoots will convert a geranium that would be long-branched and "leggy," into a compact specimen, fit to remove to the window in autumn. The chrysanthemum is a capital subject for the novice to try upon, and learn how readily the growth of a plant can be controlled by pinching.

A Pole Fence.

The engraving shows the method of making a fence of poles, as practised by a Canadian reader. It is substantial, cheap, and has a rustic look.

What may yet be Done.

The success of the market-gardener depends, in a great measure, upon keeping the soil constantly occupied. No portion is allowed to be idle, but as soon as one crop is off, another occupies its place. The owner of a family garden will find it to his advantage to follow the example of those who raise vegetables for market. The methods which are profitable for those who raise vegetables for sale, may be followed by those who dispose of their products on the family table. In the Monthly Notes about Work, we point out various crops that may be sown, and we would now enforce the point, that every foot of the soil in the home garden should be occupied and productive. The soil will produce something; if not a useful crop, a crop of weeds, and it is as much labor to keep weeds in subjection as it is to cultivate a growing crop. The old-fashioned way of "making garden" in spring and sowing everything at once, and for all, is wasteful. Peas, early potatoes, early cabbages, and others have been removed by this time, and their places should at once be filled by something. Such vegetables as remain in perfection but a few days, of which sweet-corn is a marked example, may be enjoyed for a long time by sowing every week, and the sowing may be done this month with a fair chance of good returns. Beets, beans, cucumbers, kohl-rabi, spinach, radishes, and turnips (especially the White French) are among the vegetables which may profitably follow the early crops that have been removed. If there are late cabbage plants in reserve, set them in every cleared place; they will yield a good supply of useful food for the cow if not needed for any other use.

The Treatment of Night Soil.—"J. H. S.," Morris Co., N. J., gives us his method of managing night soil. His vault is 5 by 7 feet, and 5 feet deep, with the walls laid in stone. In the botton of the vault he places a two-horse load of road-wash or road-scrapings. This is used by the family, and the chamber slops are emptied into it. Every few weeks more earth is added to absorb the liquid portions, and sufficient plaster to disinfect the mass. The contents were first removed at the end of four years, and now at the end of a like period he is about to empty the vault a second time. He proposes to add to the contents sufficient wash or road-scrapings to make it fine and dry enough to use, and to add about 400 pounds of plaster When thoroughly mixed, he proposes to use this manure in the hill, upon four acres of corn. Mr. S. thinks that this manure from a family of six persons is worth more for his corn crop than any artificial fertilizer he could buy for $20, while the cost in labor, etc., will not exceed $5. This is an excellent method of treating night soil, which is often neglected on account of the difficulty of handling it. Mr. S. does not say whether his vault is cemented or not, but much of the trouble with such deposits is due to the entrance of water from without, and cementing will prevent this.

Prize Agricultural Essays.—The Board of Agriculture of Manitoba offers prizes of $50 and $25 respectively, or medals of equal value, for the best and second best essays on the most judicious system of farming in Manitoba.

Peas for Pigs.—"D. L. S.," Grand Rapids, Mich. There is no better food than peas for growing pigs. They can be sown with oats, and the swine turned in while the vines are still green and before the peas are ripe. Ground peas also make fine food for pigs.

New Hybrid Violets.—The European "Horned Violet" (*Viola cornuta*), from the Pyrenees, was some years ago introduced as a plant especially useful for edgings. It has good foliage, and its pale-blue flowers are produced in succession all summer. Of late, European florists have, by hybridizing this with other species, produced a number of new varieties, which have much larger and darker-colored flowers than the original; some of these are of great size, and really beautiful in their shades of dark colors. Should these new hybrids endure our hot summers as well as the original *V. cornuta*, they will become popular.

"A Hollow Tail."—"R. S.," Hanover, N. H. "Hollow tail" and "Wolf in the tail" are expressions that have no other significance beyond the fact that there is something wrong with the cow. Do not cut off the tail, as the trouble is elsewhere.

Docks.—"L. M. G.," Adrian, Mich. The best thing to do with docks is to pull them. This is easiest done with the aid of a long-handled chisel when the ground is moist.

Preserving Eggs.—"R. L. G.," Aurora, N. Y. The aim in preserving eggs is to keep the air from the contents of the shell. Liming is a common and satisfactory method, and consists in immersing the eggs in a creamy mixture of lime and water, which forms a thin air-tight coat upon the shell. Oil may be used in the same way.

Manure for Fruit Trees.—"J. B. G.," Orange Co., Fla. Fruit trees, like all other plants, require a number of food elements, and no special fertilizer can be recommended for any tree. There can be no "pear tree manure," or "peach tree fertilizer." The condition of the soil determines the substance that may be needed. The leading essential elements that are usually lacking in a poor soil are potash, phosphoric acid, and nitrogen. If the soil is deficient in only one of these, it may be a waste to apply the others. Barn-yard manure supplies all the needed elements of fertility, and can be spread in the orchard with reasonable expectation of profit. Many trees do poorly from a lack of proper drainage of the soil.

Ensilage.—Ola M. Nelson, Pierce Co., Wis. It is well demonstrated that fodder can be kept in a green and wholesome state for an indefinite time. The success depends upon the exclusion of the atmosphere and the prompt feeding of the fodder after it is removed from the silos. A small silo, that will hold and keep only enough fodder for a single cow, is much desired by the mass of small farmers. A pit in the earth, holding ten tons of ensilage, can be built for a few dollars, and will preserve the fodder perfectly. This does not differ materially from a root-pit, and is within the reach of all. Any green crop may be ensiloed. The last we saw thus treated was the cow-pea, grown in Orange Co., N. Y. Corn gives the largest yield in tons, and is usually the most satisfactory. It should be cut before the frosts touch it, and put into the silo or pit as rapidly as possible, when once the work of filling is begun.

Caponizing—Fowls.—Skinner Brothers, Massillon, O. For a full description, with illustrations, see *American Agriculturist* for April, 1879.

What Fire is Destroying.—"Fire is a good servant but a bad master," says the proverb. There are few who have not seen it as master, and known what it is to helplessly look on and witness the vanishing into air of a house or barn and contents that have cost say a round Thousand Dollars. Think of a hundred such fires, of two hundred of them, or enough to destroy a whole village of considerable size. Now imagine four hundred and fifty (450) such villages, or enough to place one every mile between New York on the Atlantic and Buffalo on Lake Erie, and all on fire and destroyed. Yet this would be no greater loss than what has, on the average, been occurring every year in the United States and Canada for eight years past, at least—or $720,000,000. Take good care of the matches, the careless use or storage of which has been the most fruitful cause of fires.....*A Church Burned Every Four Days!*—During the past eight years, 646 churches have burned down, or more than one every four week days in the whole period.....*A Hotel Burned Daily!*—During the same period, 2,872 hotels have been burned, or nearly one for every day, Sundays included!

Rhode Island at the Front.—The very first "Premium List" for fairs in 1883 to reach us, is that of the Washington County (R. I.) Agricultural Society. This is not only to be commended for its promptness, but for its judicious arrangement. The premiums, which take precedence of all others on the list, are those for Farm Crops. While Horses and Races are not, as some would have them, ignored; they are not given undue prominence as if they were the chief object of the Fair. They very properly come in as a part of the regular programme.

A Precocious Cow.—A. Ellis, Orange, Tex., sends us a photograph of a Jersey heifer, only eighteen months old, that "gives eight quarts of milk per day, and the strange part of it is, she has never had or been with a calf." The milk, Mr. E. says, is very rich, yielding a pound for each four quarts. We have before heard of such freaks as this, but they are rare.

The Cow-Tree.—*The Palo de Vaca*, or Cow-Tree, grows in large forests in Venezuela, and in some other parts of South America. It reaches 100 feet in hight, and its trunk, when tapped, yields a liquid of an agreeable taste, like that of sweet cream, with a slightly balsamic odor. It is somewhat glutinous, but nourishing and wholesome. The celebrated chemist, Boussingault, on analyzing this liquid, found that its composition is much like that of the genuine milk of the cow. Seeds of this tree have been sent to Bombay, others germinated at Kew, in England, and the plants were distributed through the warm parts of the British possessions. The trees thus produced are said to be flourishing. It would be well to procure seed or plants from Venezuela to experiment with in Florida and lower Texas, for if the tree grew well there, its acclimation would be a boon to our Southern States. The botanical name of the tree is *Brosimum galactodendron;* it belongs to the family of *Urticaceæ*, which, if it were not the "Nettle Family," might be called the "Bread and Milk Family" of plants, as it furnishes the useful bread fruit of the tropics, as well as the milk to go with it.

Cows Leaking Milk.—"E. L. T.," Worcester, Mass., and several others. This is a common defect in cows. It is not well to place any elastic band around the teat, as the compression may lead to more serious trouble. A safe practice is to cover the end of the leaking teat with collodion after milking. This hardens almost instantly, and, shrinking in drying, closes the orifice so gently as to produce no harm. The film is easily broken at the next milking.

The New Varieties of Narcissus.—Very few, aside from florists, are aware of the great improvement that has been made within a few years in the different species of Narcissus. Not only have new kinds been produced, but some of the old sorts have been greatly improved. One of the oldest of garden plants is the "Poet's Narcissus" (*Narcissus poeticus*), large clumps of which are to be found in all old gardens. This species, well known by its pure white flowers, with a small yellowish cup or crown, bordered with red or purple, is often incorrectly called Daffodil and Jonquil. Almost every spring, specimens of abortive flowers of this are sent to us, with the complaint that they fail to bloom. The trouble is due to exhaustion of the soil and the crowding of the plants. They are left in the same place many years in succession, and only need taking up, dividing, and setting in new soil, to bloom as well as formerly. The Poet's Narcissus has lately been so modified, that it would not be recognized as the old garden favorite. In the variety called *coronarius*, the central cup is pure white, and many times larger than in the original. There are other new varieties of this, all beautiful, and as they keep a long while, and are fragrant as well as showy, they are popular with the city florists for bouquets and floral designs.

A Growing State.—Charles Hallock, the author, writes us: Texas has now a population of two millions. She can easily support fifty millions of people. Everybody in Texas works, and yet one-fifth of last year's cotton crop still stands in the field unpicked. Enough cotton has gone to waste in a single harvest to furnish every inhabitant of the United States with a new shirt. Even the penitentiary convicts, several thousand strong, are impressed into the field. Experiments have demonstrated that a vast extent of lands, heretofore regarded as sterile, or fit only for grazing, will yield handsomely almost any crop planted; but Texas requires no more agricultural soil. She would not have it if she could; for then she would have no wide ranges for her cattle, or pastures for her sheep. There are now five million head of cattle in the State, and two million head of sheep. Of the latter, one million belong to the three counties of Webb, Dimmitt, and Encinal, on the Rio Grande, and half a million to the Abilene district, on the Texas-Pacific R. R., embracing some fourteen counties in the center of the State. There are also a great many large herds of goats, which produce a silken fleece of the longest staple and most delicate texture. I have seen the fleece of sheep whose staple measured sixteen inches.

Green Crops for Manure.—"H. F. L.," Marshall, Mich. Some land is too poor to grow a crop to be turned under for manure. Use some kind of fertilizer to start the first crop, after which each growth will produce a better one until the land is able to grow a profitable crop. The buckwheat plant is a deep feeder; that is, has long and fine roots, and will thrive on soil unfit for most other crops. This may be sown during mid-summer, and plowed under when in flower. Some farmers who use this method of "building up" their worn-out land, sow a second crop, and follow it with clover. As soon as a sod can be established, pasturing is a good method of accumulating plant food in the soil. In this way only a small per cent of fertility is removed, while the larger part is returned in a superior form, as dung. When a field has once been brought to a good crop-producing condition, it should never be allowed to become poor again. It pays to keep the fields in "good heart."

Freaks of Fashion.—The new colors to be worn this season, according to a Paris journal, are: Frog-green (vert-grenouille); Lobster-red (rouge-homard); Toad-gray (gris-capaud); Changeable-prawn (crevette-changeante); Mouldy orange, Faded rose, and Grocer's blue. The last named is the color of the paper in which white sugar is packed.

The Toad as a Weather Prophet.—"J. F. T.," Ada, Tenn., writes us that the common toad serves him as an excellent barometer for foretelling rain. He says the natural color of a toad is rusty-brown in dry weather, and turns to a dark mottled shade just before a "wet spell." The longer the rainy weather continues, the darker the toad becomes. When fair weather returns, the toad resumes his rusty-brown coat.

Prairie Roads.—All who have lived or travelled West, know the terrible condition of the public and private prairie roads, when not frozen or thoroughly dry. After a few passages of heavy wagons, deep ruts require going on to a new line, and the widest roadway is soon covered with almost impassable ruts. At some seasons there is no driving over them. We have known of farmers carrying grists to the mill, and taking coal home, a dozen miles, on the backs of horses. When hard soil or gravel is accessible underneath, or within reasonable distance, enough of this can be put upon the center to make a fair road bed. Are there any places, except on wide river bottoms, where suitable material can not be obtained? On navigable streams it can be brought from a distance. We solicit communications on this topic—on the best means and methods of securing good roads on the prairies, and on bottom or low, muck lands elsewhere.

Polled Norfolk Cattle.

The recent importation of a considerable number of Norfolk cattle has recalled attention to a very important stock interest. This has resulted in a general recognition of the adaptation of hornless cattle for a greatly enlarged usefulness. The colors of the Norfolk Polled range from dun to bright red, the udder being of the same color, inclined to be somewhat hairy, with large teats. The tip of the nose is free from color, and the end of the tail may be white. The head is the most characteristic, the frontal bone tapering from the eye to the top of the skull, which is crowned with a tuft of hair, curling over on the forehead. This breed was developed in Scotland, from the Polled Galloway, the original native polled breed.

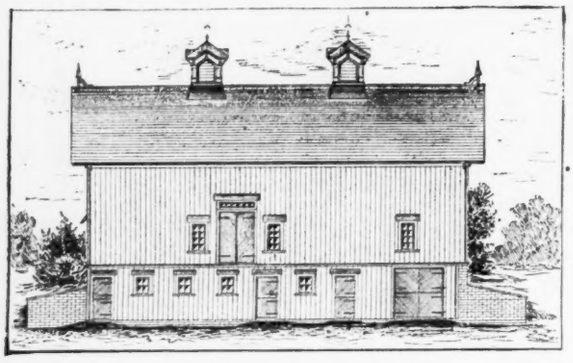


Fig. 1.—SIDE VIEW OF LARGE PRIZE BARN.

The Scotch Polled cattle of the present time are black, as was also the original Galloway. A great impetus has been given to their breeding at home by the fact they are coming to this country for beef production on our western plains. They are made a special feature of the great shows, where they have attracted much attention, especially since 1867. That the breeding and exportation of these cattle has settled into a permanent interest, is shown by the fact that the first annual meeting of the "Polled Cattle Society," held at Aberdeen, two years ago, completed arrangements for making entries to the Herd-book of the breed. Early maturity is a good point with the Norfolks. A single illustration will show this. In the great Smithfield Show, the first prize and the silver cup was won by a polled steer, three years old, and weighing 1,850 lbs. Their harmless condition and docile disposition, when it comes to herding or transportation, is of value. It is claimed that they can be brought into market at from seven to ten per cent less than the best horned stock. Some of the most noted of Shorthorn breeders are putting the Scotch Polled cattle into their herds. The money value which will accrue to this country, by simply using Polls, to dishorn that Texan animal known as the Longhorn steer, is incalculable, while this must be supplemented by the benefit we shall gain in other ways. The Norfolks have the advantage, to begin with, of being able to cross with all the red breeds, and retain that favorite color. They carry splendid teats, a strong constitution, and great feeding capacity. This is not a numerous breed, but the importation of them and their systematic breeding, is a new enterprise.

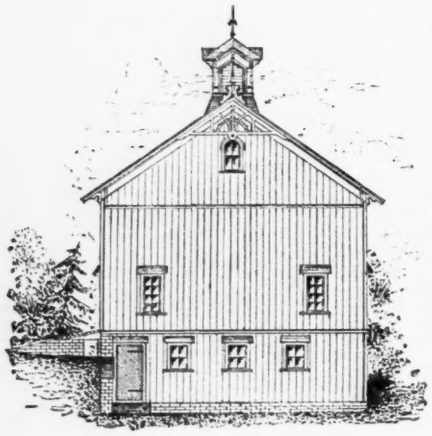


Fig. 2.—END VIEW OF BARN.

The men and boys who have had their heads cracked or their noses set up by a whack from a fractious cow's horn, will rejoice in the possession of a prime dairy animal, which can be stabled without stalls, ties, or stanchions. D. D. BISHOP.

Cutting Grass for Hay.

It was once a saying among farmers, and may be so still to some extent, that grass ought to be cut as close as possible to the ground, for it was so much thicker at the bottom, that an inch there was worth two or more at the top. This may be true or not, according to circumstances, and the kind and quality of the grass to be cut. If it be the natural growth on the broad meadows of the Connecticut, or similar river bottoms, or a very fine-stalked variety, like June grass, or the short-growing white clover, then an inch at the base may be worth two at the top. If it is Timothy, orchard, or any other coarse-stalked grass, or red clover, then two to four inches at the bottom may not be worth one at the top, especially if left standing until passed blossoming and the seed begins to form.

Fig. 3.—SECTION OF BARN.

Coarse, rank grasses are usually divested of leaves near the ground when attaining their full growth; and if they are cut close, the stubs are left so short as to be no protection against the hot summer sun. If dry weather follows for a few weeks subsequently, it will greatly injure the grass, and sometimes kill it. When protection is left by not cutting too close, a fair second growth is ensured, which, if not sufficient by autumn, for rowen or pasture, it will be at least a good protection for the roots during winter, and give an earlier start in spring and a better crop in haying time.

The invention of mowing machines has given the farmers a great advantage in harvesting their grass, for they can so set the bars and cutting knives, etc., of these, as to cut high or low, as desired. There is a considerable difference of opinion still existing among farmers as to the best time for cutting their grass for hay. Some contend, if for milch cows, it should be cut before the grass begins to blossom, if for other kinds of stock, at the time of flowering, while some contend that for horses the seed should be nearly ripe. In order to settle this point satisfactorily, it would be well for the Agricultural Colleges to extend their careful experiments with the various grasses and clover, cut at three to four different stages of growth.

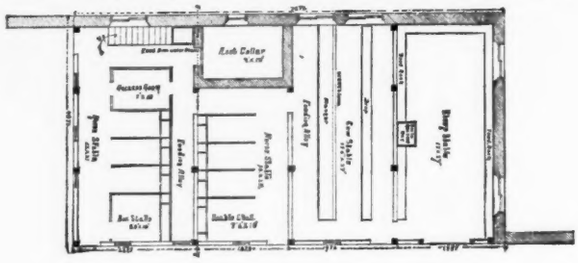


Fig. 4.—BASEMENT FLOOR OF BARN.

Plans of a Large Barn.

SECOND PRIZE IN SECOND CLASS, BY "BURR OAK" (EDWARD PRATT), JACKSON CO., MICH.

I have combined convenience of arrangement with neatness of appearance, and estimated for, a thoroughly built barn. The length is 76 feet, width 40 feet. The main building has 22-foot posts with basement walls 10⅔ feet high by 18 inches thick, laid in mortar, faced and pointed. The wing-walls and drive-ways have suitable openings left for ventilation under basement floors. The horse stable floors are of 2-inch plank sloping 3 inches: with the stalls fitted up with mangers, feed boxes, harness room, etc. The cattle and sheep stables are arranged with mangers, stanchions, racks, etc. The frame to basement is of white oak, or other equally durable timber; main frame of pine or spruce, all thoroughly braced and constructed in the best manner. The tops of interior bents are fastened with ¾-inch iron rods. The outside covering 1 inch by 12 inches best quality stock boards, dressed and battened, with doors made of 1 by 6-inch dressed and matched flooring. The large doors to drive-way, are each hung with three heavy strap and hook hinges, and fastened with standard and sliding catches. The cornice projects 3 feet, with outlookers in gables to match. The rafters are thoroughly spiked to plates and purlines. The roof is covered with dressed cull boards, and best quality 18-inch pine or cedar shingles, laid 5 inches to weather. The granary is 8 feet high, with hard-wood flooring filled in with cull brick. The hay shutes run from drive-way to alleys in horse and cow stables, and from scaffold over wagon-room to hay-box in sheep stable. The drive-way and wagon-room floors are laid with 2 by 10-inch plank dressed and matched, or square edged and lined with ¾-inch boards. Other floors

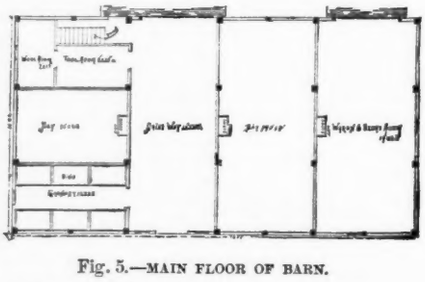


Fig. 5.—MAIN FLOOR OF BARN.

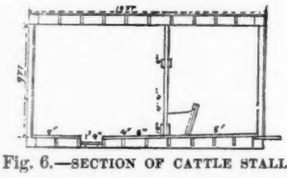


Fig. 6.—SECTION OF CATTLE STALLS.

are laid with 1-inch dressed and matched 6 or 8-inch flooring. A wagon-room 12 feet high is fitted with a windlass for raising and lowering the wagon box, hay racks, etc. Two ventilating cupolas are thoroughly secured to the roof and made water-tight around the base. The outside is painted with two

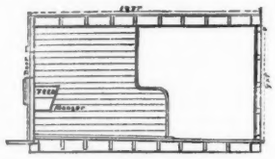


Fig. 7.—SIDE VIEW OF HORSE STALLS.

coats, the colors to suit the owner. All the materials are first class, and the entire building is thoroughly and completely finished.

Estimate of Material and Labor.

Basement, Oak Timber.

4 Sills 8 by 10, 20 feet long.
2 Sills 8 by 10, 27 feet long.
1 Sill 8 by 10, 24 feet long.
1 Sill 8 by 10, 18 feet long.
2 Sills 8 by 10, 20 feet long.
3 Sills 8 by 8, 22 feet long.
3 Sills 8 by 8, 17 feet long.
3 Sills 8 by 8, 19 feet long.
12 Posts 10 by 10, 9½ feet long.
7 Posts 8 by 8, 9½ feet long.
12 Posts 6 by 6, 9½ feet long.
50 Joists 3 by 8, 13 feet long.
20 Joists 3 by 8, 11 feet long.
Amounting to 4,732 feet, at $22 per 1,000, $124.39.

For Basement, Pine, Spruce or Hemlock.

50 Pieces 4 by 4, 18 feet long.
30 Pieces 4 by 4, 14 feet long.
At $18 per 1,000, $31.68, $156.07

2,800 feet 2 by 12 plank, 16 feet, at $16 per M	$44.80
1,400 feet 2 by 12 plank, 12 feet, at $16	22.40
900 feet 2 by 12 plank, 10 feet, at $16	14.40
350 feet 1-inch matched flooring, at $20	7.00
1,500 feet 1 by 12 stock boards, at $17	25.50
900 feet battens, at 80 cents per 100	7.20
7 windows, 4 lights 12 by 16, at $1.25	8.75
5 windows, 8 lights 12 by 14, at $2.25	11.25
	$297.37

Main Building.

8 Sills 10 by 10, 20 feet long (Spliced to made long sills)
4 Sills 10 by 10, 18 feet long (Spliced to made long sills)
4 Sills 10 by 10, 24 feet long (Spliced to made long sills)
5 Sills 10 by 10, 28 feet long (Spliced for cross sills.)
5 Sills 10 by 10, 14 feet long (Spliced for cross sills.)
16 Posts 8 by 8, 22 feet long.
10 Posts 8 by 8, 18 feet long.
5 Beams 8 by 8, 40 feet long.
2 Ties 8 by 10, 20 feet long.
2 Ties 6 by 8, 22 feet long.
1 Tie 6 by 8, 20 feet long.
4 Plates 8 by 8, 40 feet long, spliced.
4 Purline plates 8 by 8, 40 feet long, spliced.
10 Purline posts 8 by 8, 12 feet long.
10 Purline braces 6 by 8, 12 feet long.
4 Pieces 6 by 6, 12 feet long.
12 Pieces 6 by 6, 14 feet long.
8 Pieces 6 by 6, 18 feet long.
200 Joists 2 by 10, 14 feet long.
24 Joists 2 by 8, 16 feet long.
90 Joists 2 by 8, 14 feet long.
100 Pieces 4 by 4, 14 feet long.
30 Pieces 4 by 4, 18 feet long.
50 Pieces 4 by 4, 16 feet long.
40 Pieces 2 by 4, 18 feet long.
76 Rafters 3 by 5, 28 feet long.
Amounting to 26,427 feet at $20 per 1,000 $528.54

4,500 feet roofing, at $12 per M	$54.00
33,000 18-inch shingles, at $4.50	148.50
3,000 feet 1 by 12 stock boards dressed, 22 feet long	54.00
3,500 feet 1 by 12 stock boards dressed, 18 feet long	63.00
4,800 feet battens, 80 cents per 100	38.40
6,000 feet 6 inch D. and M. flooring, at $20	120.00
3,500 feet 2 by 10 D. and M. plank, at $20	70.00
10 windows, 8 lights 12 by 14, at $2.25	22.50
	$1,098.94
Basement lumber	297.37
	$1,396.31
200 Perches stone laid 16½ feet to perch, at $1	200.00
1,200 pounds nails, spikes and bolts	50.00
Eave troughs and conductors	25.00
Hinges, trimmings, etc	40.00
Painting	100.00
Carpenter work	400.00
Extras	14.34
Total	$2,225.65

Possibilities of the Japan Persimmon.

BY CHARLES H. SHINN, ALAMEDA CO., CAL.

The Japan Persimmon (*Diospyrus Kaki*) has been largely planted in California, and is now coming into bearing. Last year the fruit was first offered for sale, and the few specimens in market brought 25 cents each. This year the quantity was very much increased, and the price only 10 cents per pound. The tree is a handsome one, and is worth planting for ornament. The large, luxuriant leaves change in the autumn to a bright red or yellow before they fall. The fruit is showy and high-colored, and might be mistaken for fine, ripe, red tomatoes. We have learned, from the Chinamen in our employ, a method of ripening that is very successful. They pick the fruit when it has attained its full high color—but before it softens—and put it in water for twenty-four hours, then into a box, with layers of leaves, until it softens a little. The box is covered and put in a moderately warm place. When treated in this way, the fruit is free from objectionable astringency, and has a fine flavor. Coming after peaches are gone, the Persimmon has an additional value, and it is the general opinion of those who have tried it, that it will become one of the standard market fruits in California. In the Southern States, Georgia, Florida, etc., it is becoming popular. There is a wild Persimmon in the Eastern States, but it is not much larger than a green gage plum, while the Japanese variety has been grown weighing 13¼ ounces. This tree will not bear the extreme cold of the Northern States, but would no doubt thrive in Southern England or France. This fruit has long been known in Europe; it is noteworthy that it has not been more cultivated. Perhaps the best varieties, like the "Seedless," "Among," "Kuru Kume," "Haychuya," and "Die Die Maru," have not been carried there. The small, inferior kinds are not worth cultivating. Specimens of the fruit sent from here to Baltimore and other Eastern cities last fall, arrived in the best condition, and it is evident that it will bear the journey better than pears, grapes, plums, or any other fruit known to the trade, not excepting the orange. There need be no waste, and the markets of the West can be supplied with California-grown Persimmons of the choicest varieties. The extreme South will naturally supply the Atlantic seaboard in ten years from now. There are no large orchards in California as yet. A twenty-acre orchard near San Jose was planted about four or five years ago, but being badly cared for, has not yet amounted to much. The high price of the trees for some time after their introduction delayed planting on an extensive scale, and every one was content to wait and see whether the fruit was worth anything. It is quite possible, now that its value is established, that Persimmon may soon be extensively planted on the Pacific slope.

How to Prune Quinces.

BY W. W. MEECH.

A symmetrical form is readily secured by beginning with the young trees, and rubbing off the buds where limbs are not wanted, thereby directing their strength into desired channels. If supernumerary branches have already started, they

Fig. 1.—DIFFERENT FORMS OF BRANCHES.

should be cut out, and any that are growing too long and slender should be shortened. Haphazard pruning is almost sure to be bad. I rub off many buds the first year, and cut all trees back, whether they are transplanted or not. A sharp knife makes a smooth cut that soon heals over; but good pruning shears are preferable, on account of the greater rapidity of doing the work. The cut should be made far enough above the bud, so that it will not dry out, and near enough to grow over as the tree enlarges. When an upright growth is desired, cut down to a bud on the inside of the twig. To spread the limbs, cut to leave the bud on the outside. Cutting off most of the very small twigs along the branches keeps the branches smooth, and saves strength that would otherwise be wasted.

A wise pruning promotes growth as well as symmetry. If a tree has too great a proportion of top for the roots, the supply of material for its nourishment will be only thinly diffused, and a feeble growth will follow. The age of the tree, and the thriftiness or feebleness manifested, must all be taken into consideration in determining how far cutting back should be carried. I often find it necessary to rub off and cut out several buds and shoots at one point. No less than four often start from some of the outer buds. It is worth while to go over the trees for this purpose a number of times during the growing season, because one strong shoot is worth more than two or three feeble ones having the same amount of material divided between them.

Figure 1, *a*, shows the favorable age at which to rub off all but one bud. The buds are developed at *b*, and need the knife to cut out the supernumeraries. The vigor of shoots where the extras

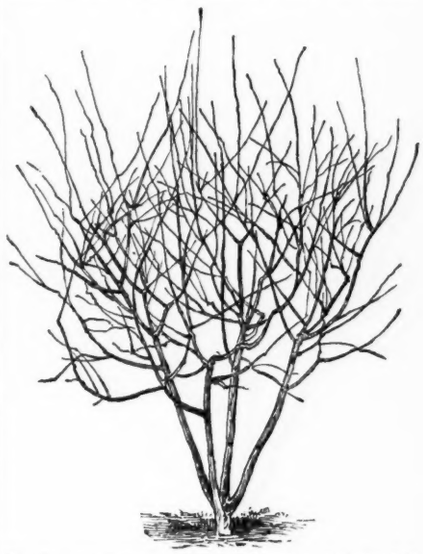


Fig. 2.—UNPRUNED QUINCE.—(*From a photograph.*)

were rubbed off or cut out in season, is shown at *c*. If shoots have made a vigorous growth, remove about half their length. If a shoot has grown two feet, I generally cut back about one-half; if five or six feet, about two-thirds the length. Treated in this way, they push vigorous side shoots, and make a lower head, which is less affected by the winds; and however heavy the fruitage, the branches never break. I herewith present two photographic views of a tree now five years old, which has been pruned each year as above described, and bearing the last two years. It made a very small growth the first year, and was cut back to within six inches of the ground. It then, the second year, sent up four shoots about five feet high, and, these being cut back, threw out side shoots that formed the head, which is now standing eight feet and five inches high.

The third object in pruning is to promote greater fruitfulness, and it should be so done as to secure all of the desired ends. When I once offered to prune the trees of a neighbor, he said: "Do you think you can improve on nature?" I replied in the language of the Great Teacher: "Every branch that beareth not fruit, the husbandman taketh away; and every branch that beareth fruit, he purgeth it, that it may bring forth more fruit." The pruner

Fig. 3.—THE QUINCE PRUNED.—(*From a photograph.*)

should keep in mind the principles that require an open head, and should not allow the limbs to cross so as to chafe each other. I cut back all my trees from year to year, as they increase in size and multiply their branches. As a result, besides great fruitfulness, they are admired by all.

The Farm Dairy.

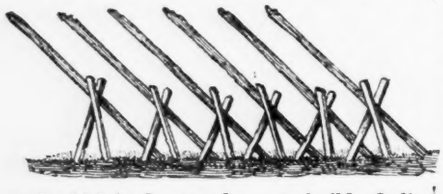
BY J. W. DARROW.

In order to compete with the proprietors of large butter and cheese dairies, farmers have been obliged to give more attention to their own resources for making a good quality of butter and cheese, and only such as do this need hope for marked success. Good cows, well watered and well fed, will produce good milk, but this is not all. Good milk must have proper care and intelligent treatment, or it will not produce fine butter or cheese. At this time of year, and later, there will be much complaint about taint in milk, and this defect is largely attributable to the cows drinking impure, stagnant water. Well watered, means having plenty of good, pure, running water. Cows should also have access to convenient shade in the hot weather. It is not strange that a can of milk is occasionally spoiled in a seemingly unaccountable way, when it contains a pailful of milk drawn from a cow in an overheated condition. Cows should not be hurried and worried in going to and from pasture, and when "milking time" comes, let the "thorough work" of cleanliness begin.

In the average farm dairy, too little attention is given to the management of milk. The introduction of what may be termed "the home-made creamery system," has proved a wonderful boon to many farmers. Such as do not invest in the patented creameries, need some artificial method for keeping the milk and cream at a proper temperature. A neighboring farmer has for several years kept milk in a cellar-tank, which is supplied from an adjoining pond of pure water. Into this water-tank, cans, 20 inches deep, are set so that the water comes to within two inches of the top, and they are left uncovered, to allow the animal heat to pass off. A thermometer, occasionally plunged into the water enables him to regulate the temperature, which should be at about 62 degrees, and as a result, the cream rises, to a depth of from two to three inches, in the can. The tank was built, and water conducted to it, at a small expense, which has been amply repaid, as the quantity of cream greatly exceeds that produced by the old method, of setting in shallow pans. By some such means as this the farm dairy may be made a profitable adjunct to general farming.

A Cheap Temporary Fence.

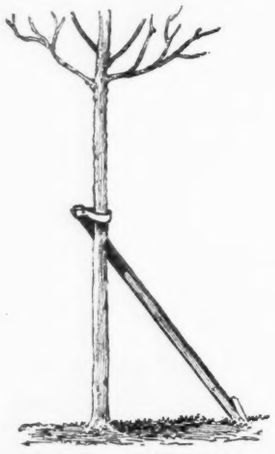
It sometimes happens, that a part of a field is put into some grain crop, while the other is desired for pasture. An illustration is herewith given of a temporary fence we have



used, which is cheap and easy to build. Ordinary rails will do. A pair of cross-stakes is driven in securely, when a rail is pushed or driven in with the hand, in an inclined position, resting on the crotch. Another pair of stakes is driven in over the end of the rail just set in, and a second rail is put in place. Such a fence can be built very quickly, will last for a season, readily turn almost any stock, and takes up much less room than a "worm" fence. A fence of this sort is well suited to a side-hill. D. Z. E.

Staying Newly Set Trees.

A very satisfactory support for a leaning young tree, and one that bends with the prevailing wind, is made by driving a stake at a little distance from the tree so inclined that the top will reach just beyond the body of the tree when the latter is upright. The tree is forced into position, a leather strap is placed around it, and the ends nailed to the stake. The strap should not be so short as to bind the tree, and it may be further tightened by forcing the stake down and driving a wedge on the upper side.



A PROP FOR A YOUNG TREE.

Do Potatoes Sport?

We have a letter from a correspondent in Wisconsin, concerning a new potato. He had been cultivating a blue variety, and on digging the crop, found in one hill a single potato that was entirely white; this was attached to the same stem (or "root," as he calls it) with one of the usual blue color. This is a case of what is called "bud-variation," of which there are many well known instances. A particular bud upon a tree or plant, without any assignable cause, will produce either leaves, flowers, or fruit, different from those borne by the rest of the plant. The bearing of nectarines by a peach tree, the production of a red rose upon a bush of a yellow variety, are among well known examples of this kind of variation. The potato, though we call it a tuber, is really a stem or branch, much modified, it is true, but it follows the laws of stem growth, and even "sports" as stems occasionally do. Numerous cases are recorded in England of the production of new varieties of potatoes in this manner. Several are known to have taken place in this country, notably the "Late Rose," which is a "sport" from the "Early Rose," and differing from it in foliage, and in a marked manner in the time of ripening. To the occurrence of such bud variations is due the common belief that potatoes will "mix in the hill." Whenever such a "sport" occurs, it should be kept and planted, as it may prove valuable.

Fairs for the Sale of Stock.

Nearly every county in England holds one or more Cattle Fairs weekly or fortnightly, and notwithstanding the amusing account the Vicar of Wakefield gives of the cheating of poor "Moses" in a horse trade at one of these fairs, the sales are usually honestly conducted, and the opportunity of buying and selling proves a great advantage to farmers, to say nothing of the benefits derived from social intercourse. Here they have the opportunity of talking over their crops, the best methods of cultivation, the state of the markets in general throughout the kingdom, and whatever else may interest them. Several attempts have been made to hold similar fairs in the United States, but without success. Ohio, Indiana and Michigan have decided to hold a Cattle Fair at Toledo. Pedigreed stock, catalogued and priced, are alone allowed entry for exhibition and sale. Why should not the fair be so general, that the farmers could bring any sort of stock, even to a single horse, bullock, cow, sheep, pig, or fowl? Then the whole community would be interested and benefited, and each person could buy or sell what he wanted, let the number of animals be few or many. This is the manner in which the English fair is conducted, and it may be that it is the only way to make it a success throughout this country.

Lime, Milk of Lime, Lime-Water.

In answering certain inquiries about the use of lime, we were met by the fact that some of the important properties of this common mineral were not generally understood. Aside from being an important constituent in the rocks, and consequently of soils, it, in some of its forms, plays an important part in our domestic economy. But few other minerals appear in such varied forms as limestone. The purest statuary marble, the coarsest marble used in buildings, the wonderful Iceland spar, and a vast number of other minerals, known only to mineralogists, are only forms of carbonate of lime. When any of these are kept for some time at a red heat, the carbonic acid is driven off and lime is left. Practically, in burning lime, a common limestone is used. If a lump of lime be exposed to the air, it will in time attract atmospheric moisture, soon swell up, and fall to pieces. If we pour water upon a lump of lime, adding a very little at a time, it will soon become hot, then swell up, crack open, and finally, though a great deal of water has been added, it becomes a fine, perfectly dry powder—much more bulky than was the lump of lime at first. What becomes of the water? It combines with the lime; it ceases to be liquid, but uniting with the lime forms a solid, the Hydrate of Lime, also called Calcium Hydrate, and popularly known as slaked-lime. If we stir some of the slaked-lime with water, as in making white-wash, we form what is called milk of lime. This is merely Hydrate of Lime in more or less water. If the milk of lime is allowed to stand a few hours, the lime will have settled at the bottom, leaving a perfectly clear liquid above.

If this clear liquid be tasted, it will be found to have a very strong taste; if shaken with an oil, such as olive oil, it will form a sort of soap, and though very clear, it has positive

properties. This liquid is lime-water, that is, water holding in solution all the lime that it can possibly dissolve. At ordinary temperatures, lime requires 700 parts of water to dissolve it. That is, a lump of lime weighing a pound, requires 700 pounds of water, or about 88 gallons of water, to dissolve it. Lime-water is a saturated solution of lime; in other words, it contains all the lime it can be made to take up. A pint of lime-water, at 60°, has in solution between nine and ten grains of lime, most substances dissolve more readily in hot than in cold water; lime, on the contrary, is less soluble in hot than in cold water. At 32° water dissolves twice as much lime as it does when heated to 212°.

If we take perfectly clear lime-water in a wine-glass, and by means of a straw, a glass tube, or any similar tube, breathe into it, throwing the air from our lungs through the tube, so that it will bubble through the lime-water, the liquid will soon be cloudy, then milky, and if set aside, the lime that was in the lime-water will settle as carbonate of lime. The carbonic acid in the breath having changed the lime into insoluble carbonate. If we expose lime-water to the air, a film will soon form upon the surface; this will sink to the bottom: another film will be formed, and so on, until the liquid shows no trace of lime. The carbonic acid, which is always present in the atmosphere, changes the lime in the lime-water into the carbonate of lime, which is nearly insoluble in water, and forms a film.

The Sheep Scab.

Scab in sheep is one of the most troublesome diseases with which the shepherd has to contend. The cause of the disease is a minute insect, *Acaris scabiei*, which burrows under the epidermis, producing irritation of the skin. Small watery blisters soon form, which finally become dry and encrusted, forming the scab proper. These being produced in various parts of the body, cause the wool to become matted, and the sheep, to relieve the itching or irritation, rub against fences, posts, etc., and tear their wool into shreds, giving them a wretched appearance. The disease is rapidly spread in a flock where healthy sheep come in contact with these fences, posts, etc., for the eggs of the mite, or the mite itself, may be readily transferred from the sheep to the fence and from the fence to sheep again. Hence it will hardly be necessary to caution against allowing healthy sheep to be in the same pen or field with scabby ones. The only method of ridding the diseased sheep of the scab is, to dip them into a liquid which will penetrate and soften the scabby portions, and even then it is often necessary to rub these places with something rough, to open the scabs, and let the liquid take effect. A sheep dip made of one ounce of sulphur and four of tobacco to a gallon of water, has been found very effective. In the water, which should be at the boiling point, steep tobacco stems or leaves, and add the sulphur later; then allow the liquid to cool down, when the sheep may be immersed. J. W. D.

MANY farmers do not fully appreciate the value of peas for pigs. Swine make rapid growth when fed on peas, and when fattened they produce firm pork and lard. In some localities the pea-weevil does so much damage that the cultivation of peas on a large scale has been abandoned, but even then, if the peas can be fed out before November, the presence of the insects in them does not effect their making a good feed. Peas are easy to raise, and to save the trouble of handling them, the pigs may be turned into the field, if desirable, while the vines are green and before the peas become hard. This, however, is not so economical a method of feeding as cutting the vines when the pods are well formed. Peas and corn in equal quantities make an excellent grain ration for fattening purposes. Pea-vines properly cured make first-rate fodder for sheep, and the manure made by stock fed on this ration is very rich. Where peas are grown on a large scale, there should be two or three sowings, especially if they are to be fed on the vines and while green. A trial of this method of furnishing good food to swine is usually repeated.

A Gate Latch.

Mr. "A. J. M.," Washington, Pa., sends us a sketch and description of a gate fastening. It is simple, easily constructed and applied, and

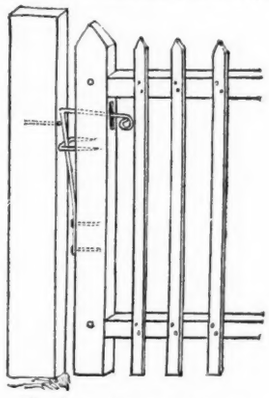


Fig. 1.—LATCH IN POSITION.

very durable. It can be made of old buggy springs, or any flat steel, and should be one inch broad by 3/16-inch thick, and about 18 inches long, at the distance of four inches from the lower end. The lever is slightly bent, and has two screw or bolt holes for fastening (fig. 2).

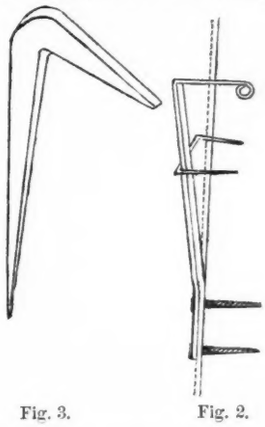


Fig. 3. Fig. 2.

Eight inches of the top portion is rounded and bent at right angles. The upper part passes through a narrow mortise in the head-post of the gate (fig. 1). A flat staple, large enough to go over the spring, holds it in place. An iron hook (fig. 3), driven into the post, holds the latch. A wooden lever, bolted to the top board of the gate (fig. 4), enables a person on horseback to open or close the gate. This latch can be applied to any kind of a gate, and is especially desirable in yards or gardens, when, by the addition of a chain and weight, one

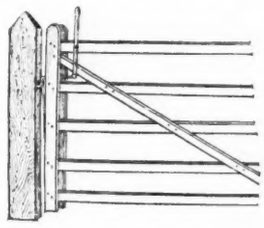


Fig. 4.—LATCH WITH TOP LEVER.

may always feel that the gate is securely closed. The latch does not cost more than 50 cents, and if properly made and put on will last as long as the gate.

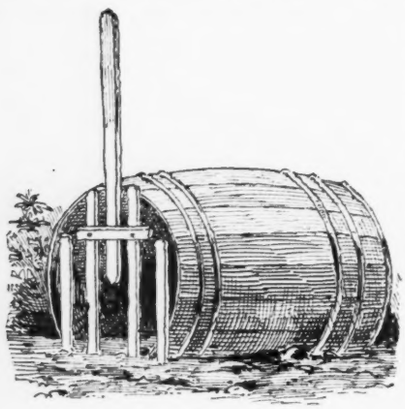
The Variegated White-rock Cress.

It is not often that we meet with a plant which is equally ornamental in both leaves and flowers. The variegated form of the White-rock Cress (*Arabis albida*) performs this part as completely as any plant within our acquaintance. There is much difference among European writers as to the proper name of the plant, some calling it *Arabis albida*, and others *A. alpina*, but the name White-rock Cress, avoids all difficulty. The ordinary form of the plant has dull green leaves, which in the variety are distinctly edged with white. The leaves form very handsome, compact and regular rosettes, which well adapt it to growing upon rock-work, or for use as edgings for small beds. The plant is a native of the mountains of Europe, and appears to be perfectly hardy. Indeed we have had it for the last 12 or 15 years in all sorts of localities, and have found it to be quite at home wherever placed. It is especially useful upon rock-work, where it adapts itself to the situation, and if placed where it can fall over the edge of a ledge, it is especially beautiful. In early spring the rosettes of leaves throw up stems about six inches high, at the top of which is a cluster of large flowers, which are especially noticeable for their pure whiteness. When the flowers disappear, the main plant forms other rosettes, the leaves of which, being broadly edged with white, are showy all through the season, and serve to make the rock-work attractive. It is a plant that may be easily forced, and if the clump is potted and kept cool, during the early part of the winter, and then brought into a moderate heat, it will soon show its copious clusters of pure white flowers. Still its chief use is upon a rock-work, and as a plant for such situations it has no superior.

POULTRYMEN are sometimes troubled with partial blindness in their young chickens, occasioned, possibly, by too little variety in their food. The eyelids in the morning are stuck together so firmly, that the chicken can not open them without assistance. When both eyes are in this condition, the chicken can not feed with facility, as it has to be guided by hearing and smell; therefore loses flesh for want of food, droops, and dies. These drooping chicks can often be saved by having their heads dipped in clean water and the eyes washed open. They then see readily, devour their rations greedily, and begin to gain flesh.

A Cheap and Convenient Chicken Coop.

Mr. "A. B. D." of N. C., sends us a sketch of a cheap and convenient chicken coop, which he has often used: Sink the barrel on its side three inches in the ground, and fill in enough earth on each side of it to keep the barrel from rocking, placing the remainder of the earth inside for the little chicks to scratch in. Split a board into five pieces, having one of them several inches longer than the others, for a door strip. Sharpen one end of each, and drive four pieces firmly into the ground, close up to the chine. Near

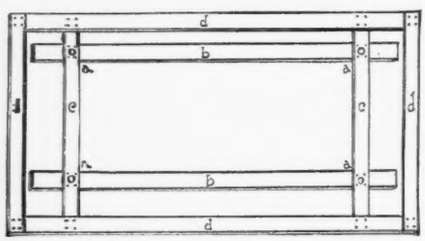


A BARREL COOP.

the top of the two center pieces nail a small strip across, as shown in the engraving. Slide the long piece in, and the coop is complete. If there should be no bottom to the barrel, place that end against a fence or fowl house. This makes the coop more secure. For every new brood of chicks, change the earth inside the barrel, to keep the bottom fresh and clean.

Wagon Rack.

There are many small farms on which it would not pay to have a regular hay wagon, and an ordinary wagon could be made to answer the purpose by using a rack like the one shown in the engraving. Any farmer familiar with tools can make this rack in about two hours. The two pieces, *b*, *b*, are 2 by 3-inch pine, either rough or planed, and overrun the wagon box, at both ends, five inches to a foot. They are laid on the 2-inch



HAY RACK FOR A WAGON.

side, so as to have three inches to bear the strain. The cross-pieces, 2 by 3-inch, *c*, *c*, are laid across the top of the other pieces, on the 2-inch surface. Inch holes are bored at *a*, *a*, *a*, *a*, into which are driven tough hickory pins, about 14 or 16 inches long, fitting into the four corners of the wagon-body, to keep the frame in place. The pieces, *d*, *d*, *d*, *d*, are strong 6-inch pine boards, securely nailed to the cross-pieces. They prevent the hay, etc., from getting on the wheels, and also enlarge the base of the load. For large wagons, use 3 by 4-inch pieces or 2-inch plank, about 4 inches wide. D. Z. E.

Black Polled Cattle in the South.

A herd of Shorthorn, Hereford and Black Polled Cattle were taken to Texas in the spring of 1882. In acclimating there, all cattle from the more Northern States suffer a considerable loss. In this case, the deaths in Shorthorns and Herefords were about fifty per cent, proving that these two breeds were equally hardy. The loss of Black Polled animals was only about twenty-five per cent. If this less loss, in future transfers of cattle to Texas, should hold true, the Black Polled will be sought far more eagerly than ever, and probably take precedence in that region. We think, however, that the losses in Shorthorns and Herefords may be greatly lessened with proper care. Bulls only should be taken there, and these in the autumn, when not over six to nine months old at the time. They ought not to be overfed in rearing, but kept growing simply in a good, ordinary way—never stuffed as is often done with young animals to force their growth, and render them more attractive to the eye, like young steers fed for the butcher. After arrival in Texas, these young bulls should be housed in summer as well as in winter, given one or two heaping tablespoonfuls of wood ashes, and of pulverized charcoal once a week, with lumps of rock salt constantly before them to lick as desired. It is not worth while—at least at present—for the Texan ranchemen to undertake to keep thorough-bred females to rear pure-blooded stock; for considering all risks and expenses, it is cheaper and better for them to purchase males only at the North. The half-product from these make excellent steers, and when it comes to three-fourths and seven-eighths of an infusion of improved blood, they do quite as well on the average, as if thorough-bred, and can scarcely be distinguished from them when in market.

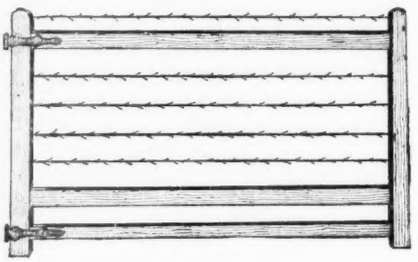
Raise Roots and Pit Them.

One great objection to the raising of root crops for winter and spring feeding, is the supposed difficulty of wintering them. If they have to be stored in the house or barn-cellar, below the stables, to keep them from freezing, and carried by hand every day to the stables, it is an expensive process. The roots are apt to heat in large piles, and some of them rot. For the first time, last November, we tried the experiment of wintering beets, turnips, and carrots, in a long narrow pit near the stable door. The ground selected was a gravelly loam, naturally well drained. The surface soil was removed to the depth of a foot or more, about six feet in width, and of sufficient length to take in the crop. The roots were dropped into the pit from the cart as they came from the field, and piled in common roof-shape, to shed rain well. They were then covered with a foot of bog-hay, and a layer of earth and sods placed upon the hay, about six inches in thickness. The roots were three feet in depth from the apex downward. Occasional ventilators were left in the roof, to be stopped with hay in the coldest weather. The pit was not opened until February, and the roots came out in perfect condition, as crisp and juicy in April and in May as when they were dropped into the pit. A frost-proof root cellar, on the same level with the stable floor, might keep roots as well, but certainly no better, and it is more expensive. The pit, close to the stables, can be extemporized on every farm, and this great luxury for cattle in spring time, provided by all. Analysis does not show a very high nutritive value for the roots, but it is possible they may add to the value of the hay, cotton-seed, and linseed meal, and the grains and other rations usually fed with them. They certainly improve the thrift of cattle, and increase the quantity and quality of the milk and butter. Do not fail to try a patch of beets this season.

CONNECTICUT.

A Barbed Wire Gate.

Mr. "E. R. B.," Prince Edwards Island, sends us a sketch of a gate he has used for several years. It is light, cheap, and easily made. The uprights are 3¼ by 2 inches, the horizontals 12 or 13 feet long, by 3¼ by 2 inches, all of pine. The horizontals are mortised into



A WIRE GATE.

the uprights, the bolts of the hinges strengthening the joints. The barbed wires prevent animals from reaching over and through the gate. To put in and tighten the wires, bore a ⅝-inch hole in the upright, pass the wires through, 1 or 2 inches projecting, plug up tightly with a wooden pin, and bend down the ends of the wire. Measure the distance to the other upright and cut the wire two inches longer. Pass the wire through the hole and tighten with pincers. When the wire is stretched, plug up with a wooden pin and then bend down the wire. If the wire stretches it can be tightened very easily.

The Best Kinds of Feed for Butter.

The practice of constructing warm barns, and arranging stock and crops for the making of winter butter, is increasing, and can be extended almost indefinitely, under favorable conditions. The great majority of our dairy farmers cease milking in October or November, and there is very little butter made for market, during the season of barn and stack feeding. A period of five months every year is a blank in the dairy business. With suitable feed and shelter, no doubt the milking season can be prolonged several months, with increased profit to the dairy farmer. To the men who are aiming at this result, and are sending fresh butter of the gilt-edged stamp to market, through the winter, the question of feed becomes a very important one. At a recent convention of the customers of the creameries in Connecticut, cow-feed was under discussion, and all agreed in the following important particulars:—"Cotton-seed meal is not desirable;

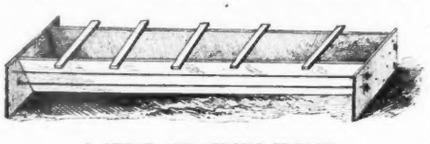
while, in very small quantities, it may do no harm, it is sure, if largely fed, to injure the quality of the butter, making it more greasy, giving it a flat taste, and knocking the flavor out." Assuming this to be correct, it is only a caveat against the excessive use of cotton-seed meal. We have used this article years ago, and are now using it, and know of nothing so good at the same cost to increase the flow of milk. There is probably no other feed in common use that makes such valuable manure. The daily rations of a Jersey cow are one quart of cotton-seed meal, in the morning, one quart at noon, and a half bushel of sliced beets, with three feeds daily of all the good hay she will eat. Fed at the rate of six quarts a day, with only hay rations, we presume the record of the creamery is correct. The butter is hard, and of good color, and excellent flavor.

Again :—"Ensilage is a risky feed, not yet sufficiently tested to be safely used by creamery patrons." This may serve to abate the zeal of our ensilage enthusiasts, and cause them to wait a little before they add to their silos. "Rye bran is to be severely let alone." Again, "Corn meal stands at the head of grain feeds, though it should be fed carefully, unless mixed with wheat feed, middlings or shorts, which are given the next place." Four bushels of corn and one of oats, ground together, were recommended by one of the most experienced dairymen present. This, we think, will commend itself to the good sense of all farmers who have ever fed much meal to their cows, and should be a strong argument with them to enlarge the acreage of their corn crop this year. Corn can be raised at a profit in New England, notwithstanding the competition of the prairie States, and the cheap freights. "Green corn fodder, to secure the best results, should be wilted twenty-four hours before feeding."

These results, reached unanimously by a company of thrifty farmers, wise enough to unite their forces in sustaining a "creamery," and whose pecuniary interests compel careful observation, should have great weight with all our dairymen. Too many of our farmers rely altogether upon old pasture for the support of their cows in summer. It might pay much better to supplement the grass with cotton-seed meal, or corn meal and middlings, to feed higher in winter, and to keep cows that you could milk ten months in the year. "Prove all things; hold fast that which is good."

A Substantial Hog Trough.

A hog trough does not last long if not well protected, and fastened securely in place. I consider from four to five feet a convenient length. For a substantial, durable trough,

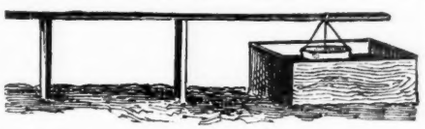


A CHEAP AND STRONG TROUGH.

I use well-seasoned two-inch pine plank. Some employ oak, which is unnecessary when the trough has its edges shod or rimmed with iron, as they always should be, to prevent the hogs from destroying them. The ends must be securely nailed in place, and to make an extra strong trough, run iron rods, with threads and burrs, through the ends, outside of the trough proper. When the trough begins to leak, the burrs can be tightened. Cross-pieces should be nailed on, to prevent the hogs from interfering with each other while eating. Oak strips can be used, or better still, iron cross-pieces screwed to the edges of the trough. D. Z. E.

A Sand Sifter.

To sift sand for building chimneys, making walks, etc., sink a tight box (4 by 6 feet, and 3 feet deep), into the ground about 6 inches. Set a 4 by 6-inch post, 6 feet long, 2 feet from



A SIFTING POLE.

the side of the box, and another post, the same size, 6 feet from the first. Nail a narrow plank firmly on the top of the farther post, and let it extend over the box. Bore a hole in the plank and fasten it to the top of the nearest post, with a rod or a large nail. Fasten the sieve to the end of the plank, letting it hang down about a foot into the box. Fill the box with water to within a foot of the top. Shovel the sand into the sieve, and shake the plank slightly and the clean sand will settle in the water. The sieve will need cleaning out occasionally. Remove the sand as it fills the box. Two boys can with this contrivance easily sift one hundred bushels of sand per day. W. T. W., GIBSONVILLE, N. C.

Farm Mortgages.

BY H. A. HAIGH.

A mortgage of real estate is, according to the common law, a conveyance of land, for the purpose of securing the payment of a debt, or the performance of some other act, upon the condition that if the debt is paid, or the other act performed, the conveyance shall become void. It affects a transfer of the legal title to the land, which becomes absolute on failure of the condition. Formerly it consisted often of two instruments—a *deed* or absolute conveyance of the land, and a *defeasance* or agreement to deed the land back again when the condition is performed. This definition of a mortgage is practically correct as applied to mortgages in America at the present time, except that in about one-half the States—including New York and others, mostly in the West—a mortgage does not now affect a transfer of the legal title from the mortgagor, but is regarded only as a pledge or security, and gives to the mortgagee only an interest, in the nature of a lien, upon the land.*

In old times, in England, the mortgagee took possession of the land, and had the profits of it for the use of the money which he loaned on it. At a later date, it became customary for the mortgagor to remain in possession, but the mortgagee could enter, and have full title the moment the condition was broken, even though the amount loaned was grossly inadequate to the value of the land. At a still later date, the Courts of Equity began to give relief in such cases, by allowing the mortgagor to redeem his property on paying the debt, with interest and costs. This relief was called the *equity of redemption*, and it was afterwards so frequently given, that it finally became an established right, and is now universally recognized. At the present time, it is not generally possible for the mortgagee to get title to the land without making use of a legal procedure, called *foreclosure*, by which this equity of redemption, after due notice, is barred or cut off, and the land is sold at public sale (to the mortgagee, if he chooses to bid highest), and from the proceeds the debt is paid, and the overplus, if any, given to the mortgagor. Here is a fine illustration of the universal principle of development which is ever operating to bring the law to a higher standard of justice.

In form, a mortgage is very similar to a deed, with the addition of a provision, called the *defeasance clause*, that if a certain condition is fulfilled, the instrument shall become void. A *power of sale* is often added, which enables the mortgagee, in case of default, to obtain relief without the expense and delay of a bill in Chancery. The same formalities of executing and recording are essential with mortgages as with deeds. The wife should join in a mortgage of her husband's lands, otherwise it will not affect her dower interest. In a mortgage given for the purchase money of land, it is not generally necessary for the wife to join. This is made so by express enactment in some States; in others a vendor's lien for the purchase price obtains on a sale of land, and prevents the dower interest from attaching. The condition which, when performed, will render the mortgage void, is usually the payment of money with interest. It may, with equal validity, be any other lawful act. If no rate of interest is mentioned, the legal one may be charged. This varies in the different States, from six to ten per cent per annum. In New York and the East generally, it is six per cent. In the West, it is from seven to ten per cent. If no time of paying the interest is mentioned, it cannot be collected until the mortgage is due. If no time of paying the principal is mentioned, it is payable on demand. Where interest is due in instalments, as annually or semi-annually, etc., it is in some States provided that if such instalments are not paid when due, interest may be charged upon them at the rate the principal bears. This amounts to about the same as compound interest, and counts up pretty fast. A note or bond usually accompanies a mortgage, but this is not essential. The effect of it is to make the mortgagor *personally* liable for the debt, so that, if on foreclosure, the property should not sell for as much as the debt, the mortgagee could have recourse against the mortgagor personally for the balance. Stipulations of various kinds are common in mortgages—as that the mortgagor shall keep the property insured for the benefit of the mortgagee; that he

* In the following States a mortgage affects a transfer of the legal title: Alabama, Arkansas, Connecticut, Illinois, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, and West Virginia. In the last mentioned State, trust deeds are used instead of mortgages. In Delaware, Mississippi, and Missouri, the mortgagor is the legal owner until a breach of the condition, and possession is taken. In the following States a mortgage does not convey the legal title, but is merely a pledge or security for the payment of money: California, Colorado, Dakota, Georgia, Florida, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Nebraska, Nevada, New York, Oregon, South Carolina, Texas, Utah, and Wisconsin.

shall pay all taxes on the property, and on failing, the mortgagee may do so, and have the amount of the same added to the principal; that the costs of foreclosure, if such becomes necessary, shall be paid by the mortgagor, or that on failure to perform any of the conditions or stipulations in the mortgage, the whole debt, with interest, shall at once become due. All these are valid.

A Tomato Trellis.

BY PICKET.

A tomato trellis which never fails to give satisfaction, is shown in the engravings. The standards or legs are made of 1 by 1½-inch stuff, 3 feet long, and tapering slightly toward the top. The slats are selected lath. Figure 1 is an end view of the trellis in position; fig. 2 shows the trellis folded. Wires extend across the top of the trellis, and when in position

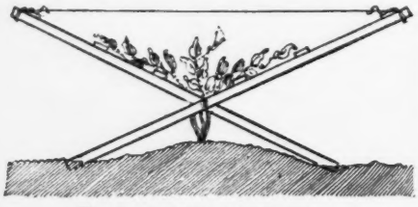


Fig. 1.—END VIEW OF TRELLIS.

they loop over the ends of the standards, and hold it at the proper width. The standards are fastened together where they cross with ¼-inch bolts, two inches long. Two lengths of the trellis are sufficient for three tomato plants. It may be placed in position when the plants have attained a hight of six or eight inches. At the end of each season, after the crop is gathered, the trellises are taken up, given a coat of paint, folded and packed away in a dry place. This form

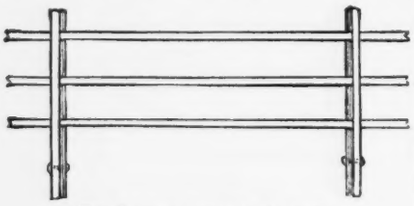


Fig. 2.—THE TRELLIS FOLDED.

of trellis has the advantages of strength, lightness, and portability.

When tomatoes are set in rich, heavy soil, they run to vine more than to fruit, and considerable pruning will be necessary, to keep them from running over the sides of this trellis and falling to the ground. We believe that tomatoes are greatly benefited by judicious pruning when the growth is rank.

Rock-Bed for Ferns.

A rock-bed for ferns can be easily made in any out-of-the-way corner, and the more damp and shady the place selected, the better the ferns will grow. The ground should first be prepared by covering it to a depth of two inches with coal ashes and broken bits of brick, crockery, or small stones. On this bed place various sized stones in an irregular pile, so that they do not lay close together. The interstices are filled in with soil brought from the woods, and planted with wild ferns. If carefully transplanted, they will keep on growing in their new home as green and fresh as if they had not been disturbed.

Quite a variety of ferns can be found in a small extent of woods, some but an inch or two in hight, and others with long waving plumes. Besides ferns, there are some vines to be found in all woods, which are very graceful, growing over the stones. Moss also should be brought in among the other treasures, and placed around the ferns, for, besides adding much to the beauty of the bed, it keeps the fern roots moist. The bed should be sprinkled every evening or two after sundown, and water frequently poured gently around the roots and over the stones, so that it will run down into the crevices where the roots have made their way. READER.

Scotch Shorthorns.

The Shorthorns bred in Aberdeen and other northern Scotch counties, during the last half-century, have proved thrifty, hardy, and profitable—among the best, in fact, of all those reared in the United Kingdom during the same period. The reason of this is, that they are never pampered, but brought up exactly as other cattle. There is one point of difference between the Scotch and English methods of treatment, and this is, that in Scotland they allow the heifer to bring her first calf at 24 to 30 months of age, while in England, the rule is at about 36 months. The cows are generally good milkers, and the calf is suffered to run with its dam until it is six to seven months old. In the winter it is fed on turnips, straw, and a little bran and linseed or other meal. By this method, stock is reared at a moderate cost, and at present prices pays the farmer a handsome profit when sold. Some American breeders prefer the Scotch to the English Shorthorns, and have made large importations of the former, particularly in Kentucky and farther West. They consider the Scotch cattle more hardy, but we must await the rearing of the young stock, for years to come, to ascertain if this is true.

Money in Heavy Horses.

The prices of the larger breeds of farm horses, those for city cart and truck work keep well up in our markets, and the supply is said to be not nearly equal to the demand. It is also noted that the price of this class of horses has advanced in England, and a few, particularly fancied for breeding purposes, have risen beyond all former prices. It is reported that 650 guineas ($3,250) has been refused for a black filly, while two three-year colts were sold at 500 guineas each ($2,500), and 500 guineas ($2,500), has been refused for this season's hire of a famous stallion. These are extraordinary prices, but even mares and stallions of a more common rank are selling at from $300 to $1,500 in both Great Britain and the United States We hope that the extensive horse-breeding establishments now forming on the great Western plains will, in a few years, be so successful as to sell horses of a superior quality at lower figures than those prevailing at present. Our population is now growing so rapidly that even this increase in horse-breeding will not keep pace with its wants. This business our farmers may rely upon, as being a safe and profitable one for years to come.

Evaporating, Canning, Cooking, and Exporting Squashes.

BY J. J. H. GREGORY.

Within a few years, a large business has been developed in the Eastern States in the evaporating and canning of squashes. These processes enable housewives to bridge the interval between spring and fall, and bring this fine vegetable to their tables in the form of pie all the year. When carefully put up, the evaporated squash makes as good a pie as when used fresh-gathered from the vine. The extent of the canning business may be inferred from the fact that when, in its infancy, I supplied a Boston firm with thirty tons of squashes, from which the seeds had been removed, to be used for this purpose, they informed me that they had already used for canning three hundred tons that season. A single suggestion, drawn from personal experience, to those who may find a market for their seeded squashes: When sending them by railroad, unless the weather is below freezing, be sure and have the door of the car open an inch or two, for squashes, when seeded, are very apt to develop heat. A word about the cooking of the hard-shelled varieties. Do not attempt to remove the shell, but, after breaking to a convenient size, cook by steam, instead of boiling. In bringing it to the table, the flesh is generally scraped from the shell, but this is not the best way. To preserve the fine grain of the squash, and keep its dryness, bring it to the table on the shell, and so serve it, with the shell as a natural dish. We have oysters on the shell; and why not squash? The old saying that "the nearer the bone, the sweeter the meat," may or may not be true, but we know from personal experience, dating from the time when we could first handle a knife with safety, that the nearer the shell, the finer, richer, and dryer is the squash.

Squashes cannot be raised successfully in the British Islands, although the average temperature there is higher than ours. That period of intense heat which we call our "corn weather," is unknown to the English, and hence they cannot succeed in the open ground with our hot-weather loving plants, such as beans, corn, melons, cucumbers, and squashes.

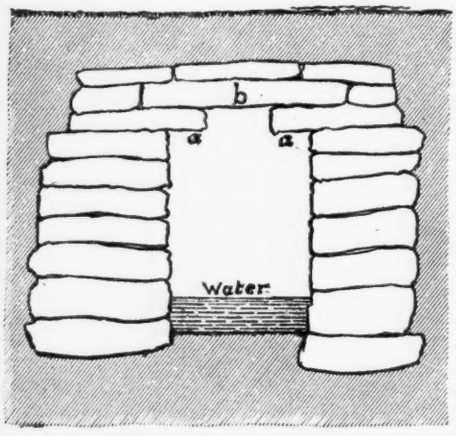
In answer to my inquiry how the English people liked our American squashes, the reply came that my agent had no means of knowing, for, as far as he had been able to ascertain, the whole shipment had been bought up by shop-keepers to show as curiosities in their windows. Further correspondence developed the fact that if they could be sold in Covent Garden Market at a shilling (twenty-five cents) apiece, very likely a large business could be done in them. I shipped my squashes by way of Liverpool, and the transportation overland from that port to London cost as much as the freight across the Atlantic; this, in addition to the other expenses, would have so much reduced the profits that at twenty-five cents each the margin on squashes, costing twenty dollars per ton in this country, would have been too small to make the business inviting. Now that we have direct communication by steamer with London, it would be wise for some enterprising Yankee to try the experiment again. I would advise the shipping of none but the hard-shelled varieties, and only the ripest of these.

ALL TAKING A HAND.

Drawn and Engraved for the American Agriculturist.

Stone Bridges.

The most durable bridges are made of stone, which is preferable to wood for this purpose, even if the expense is one-third greater. A small, well-built stone bridge will last for at least fifty years, while one of wood will need renewing twice in that period, to say nothing of occasional repairs. When a stone bridge is out of repair, it is only necessary to readjust the displaced stone; with a wooden structure, the decayed portions are, for the purpose of repairing, worse than useless. For streams, where the water, during the heaviest freshets, will all pass through an opening three feet wide and two feet high, stone bridges should be built. Larger bridges of this material are frequently met with, but they are expensive, especially if flat stones for covering are difficult to obtain. A section of a bridge, constructed wholly of flat stone, is shown in the engraving. When it is difficult to obtain stones wide enough to cover the top, let a course of flat stone, along each side, project inward



CROSS-SECTION OF A STONE BRIDGE.

from six to ten inches, as at *a*, *a*, and cover with the widest stone, as at *b*, laying on a course of smaller ones, to prevent earth from sifting through. A stone or small wooden bridge covered with eighteen inches of earth, will outlast one having a covering of but six inches. Add to the depth of covering, even if necessary to elevate it above the road-bed at the sides. Lay a wall, or place large boulders at the upper end of the bridge, outside the channel, to prevent the embankment from washing away. When the bridge is over a rapid stream or on a side hill, it is best to cover the bottom of the channel with stone. This should be done when building, and consists in placing flat stones at the lower end of the bridge, letting the stone wall rest upon them, or at least press firmly against them. One flat stone overlaps the one below, shingle fashion. Plank may be used instead of stone, being placed after the wall is laid, and the ends fastened by pins to a sill imbedded in the soil at each end.

FRENCH DONKEYS are among the largest, finest, and most powerful known. The best are bred in the provinces of Poitou and Gascony. They are the sires which produce, out of large sized mares, the superior mules one finds in Switzerland for mountain climbing. They will, with the greatest ease, carry heavy riders up the steepest ascent. The Poitou donkey is the most square built and strongest; the Gascon is taller, slighter, and of a more elegant shape. Some of the notable points of the former are a thick frizzled coat, long hair on the legs, from the knee down, and a thick growth of the same inside and around the ears. This is supposed to indicate strength of constitution, and there may be something in the claim that long thick hair preserves the donkey's skin from certain diseases. The best stallions are worth from 3,000 to 4,000 francs ($600 to $800). Donkeys of the smaller breeds may be had for from $40 up to $50 each, but such are not worth importing into the United States. We want only the largest and best, and it is most profitable to breed from these alone.

The Stems of Plants.

An examination of the structure of a plant stem of any kind shows that woody tissue, in some form, is an indispensable constituent. Its arrangement and nature varies greatly, but it is always present in the mature stem, although in many cases it would hardly be recognized as such. This variation in the arrangement of the wood has been made the basis for a division of stems into two great classes. In one the wood is in concentric rings around the pith, and is itself surrounded by a layer of bark. Each year's growth forms a new ring of wood outside that of the year previous, and completely enclosing it. Hence such stems are called *exogens*, or outside growers. This structure is easily seen in any so-called woody plant, and is typified in our Northern forest trees. Figure 1 is a cross-section of such a stem, of three years' growth. The other class produces its wood in the form of isolated fibres or threads, surrounded by pith. The new wood, or fibres, appears in the center of the stem, reaches maturity in the first year, and never increases in thickness afterward. Such stems produce no bark, and have no separate pith, it being interspersed among the woody fibres.

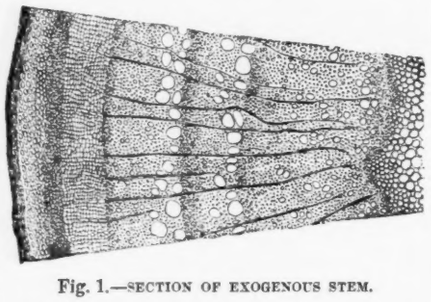


Fig. 1.—SECTION OF EXOGENOUS STEM.

They are called *endogens*, or inside growers, and include all the grains and grasses. The best example for observation is a corn-stalk, in which the woody fibres are readily seen by the naked eye. Figure 2 represents a cross-section of the same, showing several of these woody fibres.

The office of the stem, in relation to the life of the plant, is to convey the sap from the roots to the leaves, and, after it has been digested by light, oxygen, and carbonic acid, to the various parts of the plant where growth demands it. The flow of sap from the roots to the leaves always takes place in the newer or sap-wood. The heart-wood, from its density and low vitality, conveys only a little sap; and this part of the stem

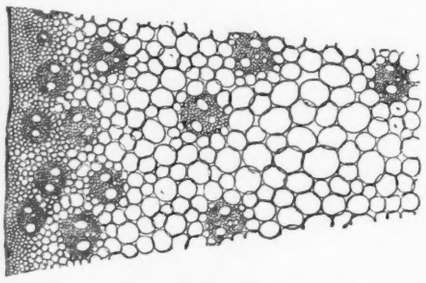


Fig. 2.—SECTION OF ENDOGENOUS STEM.

has no very important share in the work of the plant, save to strengthen the more active regions. This is shown by the fact that the vital operations go on undisturbed after the heart-wood has entirely disappeared. But the stem not only carries crude materials to the leaves, but distributes the plant food which is there prepared. The elaborated sap turns back from the leaves, along the branches to the stem, and all parts of the plant where it is needed in producing new growth. The inner, soft layer of the bark, is the most highly vitalized portion of the stem, if not of the whole plant, and it is here that new growth always takes place. From a physiological standpoint, the most important parts of the stem are the sap-wood and the inner layer of the bark. We have spoken of these regions as they occur in our woody plants of the class of outside growers, but each woody fibre of the inside grower has corresponding regions which perform a similar function. The same general laws apply to both exogenous and endogenous stems.

Besides acting as a conduit for the passage of sap, the stem bears aloft into light and air such parts of the plant, as the leaves and fruit, to which these conditions are necessary. It may also serve as a storehouse, especially in its modified forms, for reserve plant food. Starch is usually found, often abundantly, while the presence of sugar in various trees in the spring time is well known.

Certain forms of stems are so much disguised, that at first they would hardly be regarded as such. The potato, for instance, is an extreme form, and its eyes are really buds. The scaly, root-like growth of the Couch or Quick Grass is simply an underground stem, and its rapid propagation is due to the fact that each scale protects a well-developed bud. Other curious modifications are well known. The beauty of our landscapes, the adornment of our homes, and the applications of our arts and manufactures, depend upon the infinite variety of form and structure displayed in vegetable stems.

PROFESSOR HENRY, in his report of the experiments in amber cane at the university farm, Madison, Wis., states that a sandy soil is best adapted to cane-growing. It is warmer than any other, and no crop cultivated at the North "revels in heat as does the sorghum plant." The cane roots run deep into the soil, and thrive where the comparatively shallow-rooted corn would dry up and make only a stunted growth. A second advantage is, that sandy soil does not contain a large

amount of vegetable matter, detrimental to a clear cane juice. The yield of syrup on light soil is not far from one hundred gallons, to which must be added twenty bushels of seed. A rich loam will yield one hundred and fifty gallons, but such syrup requires much more care in manufacture, and will not be so fine and clear. A farmer should select for his cane field one that is naturally warm and dry, not recently fertilized with barn-yard manure. The amount of syrup made in Wisconsin last season was 491,200 gallons, scattered through thirty-eight counties. The amber cane industry is showing a healthy growth.

Is Soda Essential to Plant Growth?

Water-culture experiments have added much to our knowledge of the essential food elements of agricultural plants. The process is simple, and within the reach of any farmer or gardener who may desire to become more familiar with the nature and growth of his crops. Seeds are first placed in moist cotton until they have thrown out roots a few inches in length, and then are arranged in wide-mouthed bottles, so that only the roots are immersed in the liquid. The plant is held in place in a notch cut in the cork that closely fits the bottle. If the cotton is first washed of all impurities, and moistened with pure water, distilled from the spout of a tea-kettle or an escape-pipe of a steam engine, it is clear that the young growing plant has received no ash constituents from outside the seed. In like manner all such substances can be kept from the plant while it is suspended in the cork with its roots in the water. If only pure water is used, the development of the plant soon ceases, because the food stored up in the seed for the initial growth becomes exhausted. As soon as the green leaves begin to unfold, the pure water should be replaced by a weak solution of any substance that it is desired to test as a source of plant food. A thriving plant gets all the essential elements from the water that it would obtain from a fertile soil.

It has been found by water culture and other experiments that the leading food elements of a good soil are potash, phosphoric acid, magnesia, nitrogen, lime, iron, sulphuric acid, and chlorine. Substances containing one or more of these materials in a soluble form may be added to the water, and the effects upon the plants noted. It would be more striking to have a number of jars and plants, each with a different substance added to the water, and to observe the influence of each substance. Thus the jar with pure water may stand by the side of one containing a salt of potash or of soda, phosphoric acid, etc. The water lost from the jar by evaporation from the plant should be daily replaced, and the whole solution changed for fresh every week. Some noted experimenters, as Wolff, Knop, Sachs, and others, have so carefully adjusted the substances, as to be able to produce full-grown corn, oats, barley, buckwheat, and other common plants. Wolff's solution, in which he brought plants to maturity with well-developed seed, contained the following substances: phosphoric acid, 8 parts in one thousand of water; lime, 10 parts; potash, 9; magnesia, 1.4; sulphuric acid, 2¼; chlorine, 9; nitric acid, 30 parts. This was about 63 parts of food substances to 1,000 parts of water.

Common well water is often rich enough to perfectly nourish plants, if supplied in abundance and frequently renewed. Oats have been raised to maturity fully equaling in seed production those grown in the soil, when the well water employed contained only 32⅓ parts of solid matter or food elements in 100,000 parts of water. Water culture does not provide all of the mechanical and other conditions for the best development of plants, but it helps to answer the question with which we started. It is within the reach of any one to grow a buckwheat, oat, or corn plant without any soda. Soda is found in the ash of nearly all plants, and sometimes to the extent of 29 per cent. It is never totally absent from the entire plant, but may be absent in weighable quantities in some parts. If indispensable, the amount requisite is minute. Soda, however, has an important indirect action as a fertilizer.

Insects Injurious to the Turnip.

Nearly all of the insects which attack the cabbage in its early growth, also prey upon the turnip. Among these are the caterpillars of a number of "Cabbage butterflies," easily recognized by their whitish wings, with black markings, and lazy, lumbering flight. The Harlequin Cabbage-bug is a common pest in the South on many plants of

Fig. 1.—FLEA BEETLE, LARVA, AND PUPA.

the mustard family, as cabbages, radishes, mustard, turnips, etc. The greatest damage to the turnip crop is done by the Striped-Turnip-beetle (*Haltica striolata*). This insect is about one-tenth of an inch long, of a black color, with broad buff or yellowish stripes on the wing covers. The larva or "worm" is white and slender, with a horny, light-brown head. Its motion is slow and awkward. The pupa is also white, and forms an earthen cocoon in the soil, in which it undergoes its transformations. The perfect insects are very fond of the young turnip plants, and do great injury to the seedlings when they first appear above the soil. The eggs are deposited on the underside of the

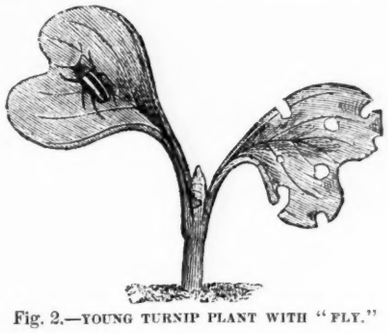


Fig. 2.—YOUNG TURNIP PLANT WITH "FLY."

foliage, and soon hatch into the "worms" that eat their way between the upper and lower skins of the true leaves. The "worms" burrow rapidly for a few days, and then drop to the ground, to pass into the inactive pupa state. The first brood of the "flies" appears in May or early June, and the second in August or September. Hot, dry weather is most favorable to the beetles, as during a rain they cannot open and use their gauzy wings. On the other hand, turnips thrive in moist weather, and ought to be hurried on in such times. The ground should be in the best possible condition of tilth and fertility

Fig. 3.—THE TURNIP WORMS AT WORK.

for a rapid growth, and with a smooth surface, so that the least time need be taken in passing through the seed-leaf state. The best, plump, vigorous seed should be sown thickly. It is well to dust the young plants with equal parts of wood ashes and land plaster. Air-slaked lime may be used in the same manner with good effect. Figure 1 shows the Flea-beetle, larva and pupa, much enlarged. In fig. 2 is seen a young turnip plant, with a "fly" and an eaten seed-leaf. Figure 3 shows the "worms" at work within the substance of the leaf, natural size, and magnified.

Commercial Fowls.

Under this head, Mr. Harrison Weir, a great English authority, discusses at considerable length the various breeds and crosses of fowls to raise and fatten solely for the market. He is most in favor of a cross of the old-fashioned English Game-cock with the Dorking, the Light Brahma, or the Buff Cochin hen, in the order named. These are small in the bone, broad in the breast, fleshy, beautiful to behold, and very hardy. The full-grown cocks of this cross weigh from nine to ten pounds, the hens are good layers, and the flesh of both is excellent.

Like most reliable English writers, he prefers for a pure breed the white-legged Dorking, not only as super-excellent for the table, but profitable for general market purposes. After the cross of the Game-cock, he prefers the Dorking cock with the Light Buff Cochin hens. The chickens of this cross lay earlier than the pure Dorkings, grow faster, and when grown appear larger. The cross of the Dorking with the Light Brahma hens gives a more compact fowl than the Cochin cross, and, on the whole, is preferable. Of a big, coarse fowl, he says what we all know, that it eats more and sells for less in market than the better bred. Choice table fowls are not so plentiful now in England as they were some forty years ago, when one used to see in the Newgate and Leadenhall markets row on row, tier on tier, of bright, white-skinned, white-legged Dorkings and Game

fowls, or crosses of both. He thinks the Poultry Shows have been an injury rather than a gain to the English people, for the decisions are more for fancy than for real value, and this, unfortunately, is to some extent true of the poultry judging in America.

Cape Bulbs.—The Freesias.

Among recently introduced plants, none appear more likely to become popular than the Freesias. While the best results will no doubt be obtained in greenhouse culture, they are so easily managed that they must become favorite plants in window gardening. The bulbs, which are rather small, may be planted, half a dozen together, in a six-inch pot. If for winter blooming, this should be done in July. They require a rich soil, made loose by adding sand, so that it will not become packed and hard by watering. The bulbs should be put at least two inches below the surface, and the pots kept in a cool and shaded place, and not allowed to dry out. After a few weeks the leaves appear, when more water will be needed, and before cool weather has checked the growth, the pots should be taken in and placed in a sunny window. The flowers may be expected in February, and they will be produced in rapid succession. The engraving shows the habit of the plant, its abundant foliage, and tubular flowers, which are produced on one-sided spikes. The species and varieties we have tried are: *Freesia Leichtlinii*, *F. refracta alba*, and *F. major*. The first and last named are of a very delicate creamy-yellow color, while *F. refracta alba* is pure white, with a shade of yellow and sometimes with streaks of lilac. The flowers last a remarkably long time, and will be popular with florists in bouquet work, for which their delightful fragrance will make them especially acceptable. The engraving shows *F. refracta alba*, of about half the real size.

THE WHITE FREESIA (*Freesia refracta alba*).

Kerosene as an Insecticide.

Paris Green, London Purple, and other arsenical compounds are deadly poisons, and even when used on plants with the greatest care, are dangerous to both man and beast. Pyrethrum is effective and safe, but costly. The many experiments with kerosene as an insect destroyer, during the past two years, convinces leading entomologists that this well known and cheap fluid meets a long-felt want. The best method of applying kerosene is in a fine emulsion with milk, made by a process of churning, and afterwards diluted to any desired strength. The emulsion can be applied through a fine rose of a watering-pot, or on a large scale by a force pump with a spray nozzle. The kerosene, thus showered upon the plants, is very penetrating, and will destroy the insects in all stages of developments, even to the eggs. Two parts of kerosene to one of sour milk is a proper proportion. If fresh milk is not at hand, condensed milk, diluted to the same strength, may be employed. This mixture is successfully used for the scale insect in the orange groves of Florida, and can be, it is thought, employed to destroy Chinch-bugs. A mixture of water and three per cent of kerosene is deadly to the bugs, and does no harm to the growing corn. By spraying a few outside rows, nearest a ripening field of wheat, the whole area of corn can be protected from the second brood of the destructive Chinch-bug. The apparatus for the cheapest and best application of the emulsion is yet to be devised. Doubtless a sprinkler drawn by two horses could be made, that, by passing between the rows of corn, would spray them quickly and effectively.

All farmers seriously troubled with insects should give kerosene a trial. By using a cheap grade of petroleum, the expense is small, and, with the necessary apparatus for applying the emulsion, a safe and successful war may be waged against the insect enemies. Much depends upon promptness and energy: therefore, the farmer should be prepared to act at the earliest warning. A barrel of kerosene, and a garden force-pump, with necessary attachments, ready for use, may come to be as essential a part of a well-equipped farm, or fruit and vegetable garden, as fire extinguishers in a city. Try the mixture on a small area, to determine the proper strength. It may be that one proportion is best for the Potato-beetle, and another for the Cabbage-worms, etc.; but the emulsion must never be so strong as to injure the plants upon which it is sprayed.

Experiments with Potatoes.

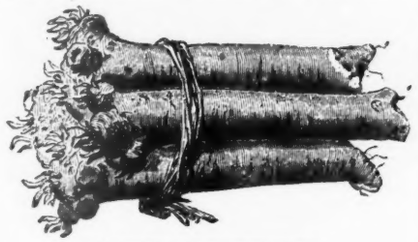
Among other observations on the growth of the potato made by Dr. Sturtevant, Director of the New York Agricultural Station, we note the following: The method of cutting the tuber is one of the important factors determining the yield. Whole potatoes proved better than pieces with single eyes, improperly cut, but not equal to those so cut that each eye carried with it the whole of its "vegetative zone," which runs from the eye obliquely toward the center of the tuber. When shoots were broken from the potato and planted, they failed to continue their growth, but buds formed in the axils of the young leaves, from which both aerial and underground stems grew. Only three or four eyes developed stems in an ordinary potato planted whole, but similar ones, when injured by scalding water, produced thirty or more. With longer scalding, small potatoes, up to twenty-five, grew at the eyes in place of, or intermixed with, the numerous shoots. When the scalding was more prolonged, stems developed beneath the skin of the potatoes, and upon cutting open the tubers, they offered the striking phenomenon of new potatoes growing within the substance of the old ones.

"Evaporating" Fruits and Vegetables.

The term "evaporating" of fruits and vegetables, is applied to the use of heated air to carry off the moisture, and as distinguished from drying by the heat of the sun. That this is already an important industry, and is destined to become still more important, is shown by the various "evaporators" now offered, and the numerous letters of inquiry sent us concerning them. We can answer, in a general way, that the use of a current of hot air for the purpose of drying fruits and vegetables, is not patentable, while the various devices for producing the hot air, and applying it to the fruits, etc., may be. There are at least half a dozen of these devices now offered, and it is not possible for us to say which is the best. So far as we have seen the products of the leading machines, as they are offered in the market, there appears to be very little difference between them. The best advice we can give those who write us letters of inquiry is, to send for the descriptive circulars of each and give them careful study. It is hardly possible to give a plan for the use of hot air for drying or "evaporating" vegetable substances, without unintentionally using some device covered by a patent. Besides, it must be remembered that the various evaporators and dryers now offered, have been subjected to the test of actual use. Any affair that one might make for himself must be experimented with, and in the end will cost more than to purchase one that has been already tested. The different evaporators, so far as we have seen them, or their descriptions, have several advantages over sun-drying. They allow the drying to go on rapidly, so that there is no chance for incipient fermentation. The drying is done in the dark, which prevents discoloration of the article. With apples and other light-colored products, they allow of the use of sulphur fumes to bleach them and improve their appearance, an operation which, if properly performed, is not objectionable.

European Horseradish.

The engraving illustrates the peculiar bundles of the European horseradish. A dozen or less of the roots are firmly bound by means of a willow withe, to form a bundle. The roots are bunched without first washing them, and do not present a very attractive



A BUNCH OF HORSERADISH.

appearance. Being closely packed in casks, during the voyage in the warm hold of the steamer, the tops start into growth, and when the casks are opened, they present a mass of drawn-out, blanched leaves, which must be removed before the bundles are offered for sale. An inspection of these imported roots shows that the Holland growers treat the plant the same as we do in this country, i. e., they plant a set made of a slim side root, and allow it to grow but one season. The English market-gardeners often follow the old method of planting out the crowns, and have a far less satisfactory crop.

The Chrysanthemum.

When we compare our flower culture with that of other countries, no feature is more

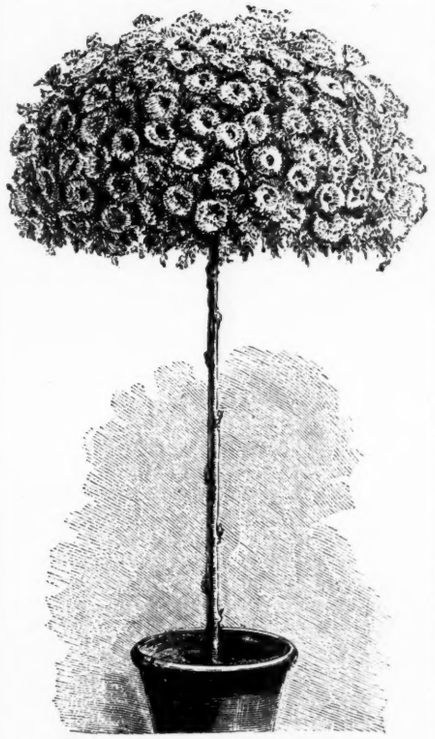


Fig. 1.—STANDARD CHRYSANTHEMUM.

striking than the difference as to Chrysanthemum culture. While in England there are over twenty societies, kept up solely for the encouragement of the culture of the Chrysanthemum, in this country it has received very little attention. The plants being hardy, they are generally treated as other hardy perennials. They are set out, and left to take their chances. While treated in this manner, they do good service by making the garden gay at a time when there is little else in bloom; it does not put this plant to its best use, that of ornamenting the conservatory or window garden during the autumn and early winter months. Let us say, in the first place, that the florists make three very distinct classes of Chrysanthemums, the "Large-flowered," the oldest sort; the "Pompone," a class distinguished by its very small flowers, produced in great abundance; and the "Japanese," a set recently introduced, and distinguished by their very long florets, which give the flower a peculiar aspect. All these are desirable, but if the beginner can have only one kind, let him by all means select the Pompones.

English writers upon floriculture recommend the Chrysanthemum to novices as a plant upon which to practice training, as it most readily yields itself to the treatment. At the Chrysanthemum Shows in England, plants are trained in three principal forms: the "convex," the "standard," and the "pyramidal." In the convex form, the plant is, by pinching and training to a wire frame, made to present a convex mass, a few inches high, and with a much larger diameter than that of the pot. We pass this by as being rather difficult for the beginner. The standard form is shown in figure 1. To produce this, a potted plant is grown to a single stem, and kept tied to a stake. Side shoots will appear upon the stem, which are pinched back to two leaves. When the stem reaches the desired hight—a foot or more—the growing point is then pinched out. This will cause a number of shoots to start from near the top of the stem, and these are trained to form a head. When these shoots are about six inches long, they are stopped by pinching out the point. This will cause secondary shoots to appear, which, with the others, are tied out, using secondary stakes, if needed, to form a symmetrical head. By mid-summer the head will be formed, and but little training is needed after that time. To form the pyramid (fig. 2), the side shoots at the bottom are allowed to grow six inches long or more before they are stopped, by pinching the growing end. The shoots above these are gradually shorter, and by the aid of sticks, to which the branches are tied out, a pyramidal form is secured. A simpler method of training is the "Bush-form," which may be practised upon plants in the open ground. It consists in pinching out the end of every shoot at the time the plants are making their growth. This will produce a round-headed bush, which may afterwards be potted. Those who have plants in the border, should pot a share of them for blooming in the greenhouse, or in the window of the dwelling. As soon as the buds appear, take up the plants and pot them in rich, loose soil. They may wilt at first, but by shading for a few days, they will recover. Those who exhibit Chrysanthemums, remove a portion of the buds, and, of the large-flowered kinds, allow but one bud upon a shoot. After potted plants have bloomed, withhold water gradually, and when they

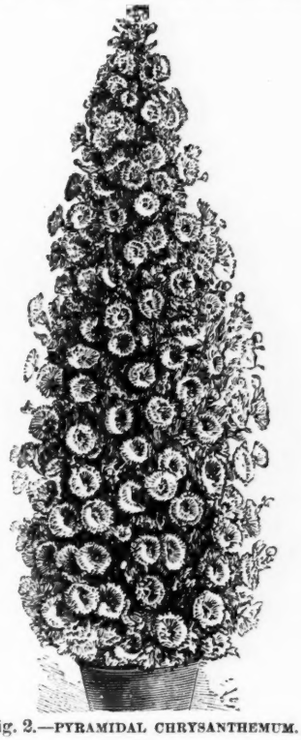


Fig. 2.—PYRAMIDAL CHRYSANTHEMUM.

are at rest, cut back the stems and place the pots in the cellar, but do not let the roots get "killing dry" during the winter.

Home-Made Capers.

A friend in Virginia inquires of us if the climate of that State will allow of the cultivation of Capers, and asks how he shall propagate the plants. This is one of many illustrations of the tendency of the people of the Southern States towards a diversified husbandry. Instead of depending solely upon cotton and corn, the present generation of farmers cultivate crops that were unknown to their fathers. The indications are, that before many years every crop that may be profitably grown in a sub-tropical climate will be produced in our Southern States. In the introduction of a new culture, the climate, though an important one, is not the only point to be considered. There are certain crops that can only be grown in thickly settled localities, such as those which must be gathered at once and rapidly. Though the crop may be grown without difficulty, it is worthless unless there is abundant help to gather it on a given day. The Caper is a native of the south of Europe, and flourishes on both shores of the Mediterranean. As it survives the winter in the vicinity of Paris, with a slight protection, it is very probable that it could be cultivated in Virginia. The Caper is a very prickly, much branched, straggling shrub, three to five feet high. The engraving shows the habit of the plant, and the shape of the leaves. The appearance of the flowers is given in the separate branch above. The botanical name is *Capparis spinosa*, and it is the type of a small order of plants, the Caper Family, nearly related to the Mustards. The portion used is not, as many suppose, the fruit, but the flower-buds, which are collected just before they expand. The bush grows best upon rough land, such as stony hill-sides, which are unfit for any other crop. It is propaga-

THE CAPER PLANT.

ted by cuttings: the portions removed in pruning are set out in nursery rows, and the next year those that have taken root are planted, setting them six feet apart each way. In autumn the stems are cut back near the ground, and the stools covered with a few inches of earth. In the spring these mounds are leveled, and the ground hoed or plowed. New and vigorous shoots are thrown up, and in May the first buds appear. The gathering, which is made every day or two, continues until autumn. This work is done by women and children, and, on account of the sharp spines, is described as "cruel torment" to those engaged in it. The gatherings of each day are thrown into a cask containing salt and vinegar. The Capers are prepared for market by assorting them by means of sieves, seven different sizes, each with its trade name, and placing them in bottles with fresh vinegar. In some localities they are put into vinegar at once, no salt being used.

The Caper is long lived, some plantations being a century old. The plant may be raised from seeds. The French writers mention a variety without spines, and say that it comes true from seed. An herb, the "Caper Spurge" (*Euphorbia Lathyris*), is sometimes cultivated in gardens, and called the "Caper-plant." The unripe seed-pods are by some pickled and used as Capers. It belongs to a poisonous family, and it should not be used, as serious results may follow.

Insect Enemies of Melon Vines.

A correspondent in Jackson Co., Miss., writes us that his watermelon vines were attacked by the Striped-bug, and he dusted the plants with Paris green, largely diluted with flour. Although the vines have not yet set their fruit, he is fearful lest some poisonous quality be communicated to the melons, and wishes to know if this is possible. Enough of such violent poisons as Paris green may be used to kill the plants. That a plant to which poison has been applied, can take up enough and carry it into its circulation to make the fruit, the tuber (as in the case of the potato), or any other edible part of the plant, dangerous to use as food, is highly improbable. The plant, if it takes up poison, is killed. Our friend states that at the time he applied poison to his vines, no fruit had been set. This being the case, we are quite sure, if the vines survive, that no poison will be found in the fruit. Small frames—boxes a foot square and six inches high, without top or bottom, and covered with mosquito-netting, have proved most useful. Mr. Joseph Harris, in his "Gardening for Young and Old," states that he has used for the Striped-bug, when the vines were young, a teaspoonful of Paris green and two tablespoonfuls of White Hellebore (powdered), stirred into a pailful of water. This he applies with a whisk-broom. When the vines get stronger, a tablespoonful of Paris green to the bucket of water may be used. We do not think it is possible that any injury to the plant can result from using Paris green in these quantities.

Mr. "W. D. B.," Shiocton, Wis., describes his melon protector-box as follows: The two triangular frames for the ends are ten inches high, and the pieces connecting them about one foot long. All these are of split lath, and tacked together with lath nails. For the sides, the mosquito netting is stretched from one bottom piece over to the other, and tacked securely. The end triangular pieces are cut of the size wanted and tacked to the frame. The bottom pieces are pressed down into the soil, when the plant is covered, so that no insects can get under the frame. A good brisk hand can make fifty of these little "houses" any rainy day, and if used carefully, they will last two years.

The striped beetles make their appearance early in the season, and frequently penetrate through the cracks of earth made by the sprouting seeds, and nip off the young plants before they are out of the ground.

Winter Radishes—Chinese Rose-Colored.

The use of winter radishes in this country is mainly confined to our citizens of European birth. The Long and Round Black Spanish radishes are to be found in our city markets in winter. Though tough and exceedingly pungent, they are liked by many. Within a few years the "California Mammoth White Winter Radish" has made its appearance: this and some closely related varieties, known as "Russian Winter," "Japan Winter," etc., all produce large roots, sometimes a foot or more in length, and weighing as much as three pounds. These have been introduced by the way of California from China and Japan. The Japanese, especially, regard the radish as one of their most important vegetables, and have some varieties that reach the enormous weight of thirty and forty pounds. Of all the varieties of winter radish that we have tried, the most acceptable is the "Chinese Rose-colored Winter." This, when well grown, forms a root about five inches long and two inches in diameter at its broadest part, the lower end. The form, which is quite peculiar, is shown in the engraving. The skin is of a bright, clear rose-color, and is marked with transverse lines of white. The flesh, though somewhat firm, is, when well grown, crisp and tender, and in this respect, as well as in flavor, more nearly resembles the early radishes than do any other winter varieties. If properly kept, they have a freshness and crispness that makes them welcome to all who like radishes. Winter radishes are cultivated in much the same manner as turnips. The seed may be sown from the middle of this month to the end of the next. If to be cultivated by hand, the rows may be fifteen inches apart, but for the horse cultivator the rows must be at the proper distance to suit the implement. Sow enough seeds to allow for the attacks of insects, and finally thin to four inches apart. Good cultivation and the necessary weeding must be given. Like other late crops, this makes its most rapid growth when cool nights, with abundant dews, follow warm days, and it should be encouraged by frequently stirring the soil. When cold weather stops the growth, take up the roots and place them in trenches as advised for parsnips, salsify, and other roots. They may also be preserved in the root cellar in boxes or barrels, mixed with sand or dry earth, using at least a bushel to every two bushels of roots. A friend of ours sinks a barrel in the garden and packs in the roots with an abundance of forest leaves, taking care to have a thick layer of leaves at the top; the barrel should have a good cover. Those lovers of radishes who have not tried the "Chinese Rose-colored Winter," have a pleasing novelty in store.

THE "CHINESE ROSE-COLORED WINTER" RADISH.

Lavender.—Its Cultivation.

In this country, the nearest approach to the "Physic Gardens" of Europe is to be found in the limited areas devoted to medicinal plants by the Shaker communities. There is nothing in our climate or soils to

THE LAVENDER PLANT.

prevent the growth of the medicinal plants so largely produced in Europe. But aside from their cultivation, the gathering of the products, and their preparation for market, demand an amount of manual labor that prevents their profitable culture in this country. We have had, of late, numerous inquiries as to the cultivation of Lavender, which we can best answer in a general article. Lavender (*Lavandula vera*) is a low shrub, about three feet high, a native of Southern Europe. The engraving gives the general aspect of the plant; the narrow leaves are of a hoary-green color, and the flowers, borne upon long and slender spikes (one of which is shown separate), are blue. This shade of blue is so peculiar, that "lavender-blue," or "lavender color," is in common use to describe this tint. The flowers are delightfully fragrant, owing to a volatile oil, which, in various forms, is universally popular as a perfume, and on account of its stimulant, aromatic qualities, is used in medicine. The common name of the plant, and the botanical name (*Lavandula*), come from the Latin, *lavare*, to wash, the perfume having long been in use in bathing, and the use of the flowers for perfuming newly-washed linen, has given origin to the expression, "laid up in lavender." Lavender may be raised from seeds, sown in a seed-bed in spring, and the plants set when two inches high, in rows two feet apart, and a foot distant in the rows. When the plants crowd one another, every alternate one is taken up and transplanted to new rows, placing them two feet apart. After a plantation is established, the plants may be increased by means of cuttings, which take root very readily. A light, warm soil is better than a heavy one. The crop is gathered by cutting the flower spikes, just as the bloom commences, by means of a sickle, and tying them in bunches of convenient size. In England, as a general thing, the producers of the flowers sell them to those who distil the oil from them. It is said that from twelve to twenty-four pounds of oil are produced to the acre. Though a native of a warm climate, Lavender is not especially tender; we have known it to endure the somewhat severe winters of Newburgh, N. Y., and it will no doubt succeed in any of the Middle States. Lavender has long been cultivated to a moderate extent near Philadelphia, and in their season the flowers are offered for sale in the markets of that city. The flowers are purchased by those who wish to make sachets for perfuming clothing, and by the druggists, who use them for distilling Lavender water. It is estimated that within twenty miles of London, there are about 600 acres devoted to the cultivation of Lavender. The Oil of Lavender produced in England brings a much higher price than that from the continent, which is said to be produced by distilling the leaves as well as the flowers. While the climate presents no obstacle to the culture of Lavender in this country, we would ask our friends, who have inquired as to this point, what they expect to do with their crop after it is grown? They must either sell the flowers to those who wish to use them for the distillation of the oil, or they must distil them themselves. To do this requires a technical knowledge and skill not possessed by the ordinary cultivator, but which he may acquire by proper study and experiment. With Lavender, as with all other special products, one of the most important questions is, "What will he do with it?" Unless this is clearly foreseen, it is not wise to undertake its cultivation.

The Yuccas, or Adam's Needle.

It is gratifying to notice that the taste for plants with beautiful foliage or of striking form is increasing. It shows that people are slowly learning to see beauty in something besides flowers. Among plants that afford both striking foliage and abundant flowers are the yuccas. The most common species, *Yucca filamentosa*, frequently called "Bear's Grass," is a native, and found from Maryland southward. Its long leaves have loose fibres hanging from their edges, and are terminated by a hard, sharp point. It throws up a stalk, six feet or more high, bearing an ample pyramid of large, pendent flowers, of a creamy whiteness. All do not admire this yucca merely for its ornamental character. Several years ago we published an article from a correspondent in Ohio, who advised farmers to grow a patch of it for the purpose of furnishing handy strings and tying material. The leaves are filled with strong fibres running the whole length, and, when split, afford a very tough material for tying. The plant is readily raised from seed, and a patch of seedlings presents a great variety in the length of the leaves and in the whiteness of the flowers. More showy than any form of the common yucca, is that cultivated under the name of "Pendulous Yucca" (*Y. pendula*). It is a favorite form in Europe, and European works give it as a native of North America. As shown in the engraving, this is distinguished by its long and pendent leaves. It produces its flowers in a stately panicle. This is not known in the wild state, and is probably a garden seedling of one of the Southern species, *Y. gloriosa*. At all events, it is kept in the nurseries as *Y. pendula*, and is the most ornamental of the hardy yuccas. It endures the winter in the rather severe climate of Rochester, N.Y. Yuccas readily form clumps by throwing up suckers; they produce a much better effect when these are removed.

THE PENDULOUS YUCCA (*Y. pendula*).

Water Lilies.

THERE is hardly a more beautiful sight in the country, than a pond or lake fringed with water lilies (*Nympha odorata*) in full bloom. These grow abundantly in sluggish streams and ponds with muddy bottoms, and in the greatest profusion in mill ponds, where large tracts of land have been flowed, and mud has accumulated in shallow waters for many years. The shores of the stream that has been dammed, is sometimes fringed for miles with these beautiful flowers. The pond lily has a large fleshy root, as big as a man's arm, and can be transplanted with ease to any suitable locality near the home. The necessary conditions are water, from two to six feet deep, and a muddy bottom. They sometimes grow in stagnant ponds, where the water is very low, or dries up in summer, but they thrive best in ponds, through which the water always flows. Almost any stream fed by springs, if dammed, will furnish water enough to make a garden of lilies. It will be a cheap pleasure, lasting all through the summer months—and a life-time as well.

THE HOUSEHOLD

Hide and Horn Furniture.

In the Spanish sections of North and South America, the first thing which strikes the stranger about the household is the picturesque and unique furniture of native manufacture. There are some objects of factory make, imported, but these are more for show than use. The staple furniture of a Spanish-American house is a part of the country itself. You suspend your sombrero (broad brimmed hat) at the door on a hat rack made of the straight stem of a mimosa or some other rough barked tree, with polished horns for pegs. You rest your saddle bags on a stool made of bamboo or unbarked branches, with a seat of rawhide, the hairy side out. Your host receives you, rising from an arm-chair constructed of three splendid bull's horns fastened to a rough cylinder of wood, with rawhide stretched between the horns to form the seat and arms. The abundance of cattle in these countries has brought the ingenuity of the natives into exercising itself to utilize the products of the herds, and the result is the various forms of domestic furniture, which the engravings faithfully represent. A peculiarity of all Spanish-American furniture is the absence of metal in its construction. Wooden pegs are used instead of nails to fasten the horns to the wood, but the manufacturer appears to have a rooted objection even to the use of these. He relies principally on the leathern thongs with which he sews and ties everything together. And even his knots are peculiar. They are never the hard knots we commonly use, but an intertwisting of the thong or cord, such as is popular with sailors. These knots or twists vary with the countries in which they are found. Knots used in Southern California, Arizona and New Mexico are different from those of Old Mexico, while in Central or South America nearly every State has a different method of making them. But wherever or however the furniture is made, it is very durable. The writer brought the chairs, stools and settees, from which the accompanying engravings, [figs. 1, 2, 3, 4, 5, 6, and 7,]

Fig. 1. HORN HAT-RACK.

Fig. 2.—HORN BRACKET.

were made, from Venezuela. They were not new when he bought them, and they have been in constant use since, needing only an occasional bit of cord or a nail, to keep them sound. Our farmers may find suggestions here for the use of the horns and other waste products of slaughtered animals.

Children's Diet.

Whatever we may think of pastry, tea and coffee for men and women, it is certain that they are not the most unobjectionable forms of food for children, who depend so much on proper nourishment for health and growth. A child should have plenty of pure, fresh milk, either warm or cold, and with it wheat bread. Good oat-cake is made by saturating oat-meal with water, pouring it into a tin, and baking twenty minutes. Wholesome corn-cakes are made by mixing corn-meal with boiling water, just stiff enough to make into cakes with the hands, and baking in a moderate oven. These, with cracked wheat, oat-meal or corn-meal porridge, and syrup made of pure maple-sugar, and all the ripe or stewed fruit they care for, should change delicate, complaining juveniles into healthy, handsome, and happy little children. A. E. W.

Flies and Mosquitoes.

There are few places in which it will not pay to provide all of the windows, at least of rooms that are used, and the outer doors, with screens of wire cloth. Those who cannot afford the outlay for

Fig. 3. MEXICAN EASY CHAIR.

Fig. 4.

wire screens, will find a cheap but not durable substitute in mosquito netting. The frames may be placed just inside of the window sash, and so ar-

Fig. 5.—A BAMBOO STOOL.

ranged as to answer for either the upper or lower half of the window. In spite of all the nettings, some flies will make their way in. These may be easily driven out by closing the blinds of all the windows but one, which should be left partly open at the top. Two persons, each with a folded newspaper, can readily drive every fly out at the open window. Rooms used only at night should be put in order and aired very early in the morning, and kept closed during the day. To clear a sleeping room of mosquitoes, take a piece of paper rolled around a lead-pencil to form a case, and fill this with very dry Pyrethrum powder (Persian Insect Powder), putting in a little at a time, and pressing it down with the pencil. This cartridge, or cigarette, may be set in a cup of sand to hold it erect. An hour before going to bed the room is to be closed, and one of these cartridges burned. A single cartridge will answer for a small room, but for a large one, two are required. Those who have tried this find that it effectually disposes of the mosquitoes. Where rain-water is caught in casks or tanks, these afford breeding-places for myriads of mosquitoes. All such water receptacles should have tight covers.

No matter how troublesome the flies, do not be tempted to use the so-called fly-powder or "Cobalt." This is not cobalt at all, but crude arsenic, and is exceedingly dangerous—all the more so as it is sold under a wrong name. The fatal poisonings of children within our knowledge, lead us

Fig. 6.—A HORN ARM CHAIR.

to warn against its use. Some of the fly-papers contain arsenic, and should be avoided. Quassia is poisonous to flies, but harmless. Make a strong tea of the chips (sold by druggists), sweeten, and expose in plates where the flies can get it.

Easy Washing of Clothes.

There is not much difference in the various kinds of good soap now in the market. A little common sense or scientific understanding is better than a "magic" quality in the soap. In reading the directions on the wrappers, one sees that the manufacturers mean to make us use plenty of this soap. They unite in advising that the clothes be soaked in strong, warm suds a little while—from twenty minutes to an hour—before rubbing. This process, with any good, clean soap, will make the clothes free from dirt with very slight rubbing. It is well to have a small quantity of water, only moderately warm, not hot, as clear hot water will set dirt and stains, and make them much harder to cleanse. Put some of the clothes in this, and when wet, rub the soap on one garment at a time, especially upon the parts most soiled. Then roll up the garment tightly, and put it under water, and soap and roll the next piece. Put the dirtiest clothes by themselves, using several tubs, pails, and other utensils, if more convenient. Leave them all tightly rolled and soaped, under lukewarm water, for about half an hour—longer if you choose, but not over night, as some advise. I like to warm up the water by the addition of more hot water—the hotter the better, now that the clothes are well soaked. A warm, strong suds makes the rubbing easy, even when the washboard is used.

In employing a common, cheap, but clean soap, I often put less than a level teaspoonful of powdered borax into the bottom of my tub, pouring hot water on it, and then cooling to the proper degree. This borax makes the washing more easy, and is good for the hands, healing them when chapped, and leaving them in good condition after washing. Whatever good soap you use, it is not necessary to boil the clothes, but this process helps in most cases, especially if the clothes are

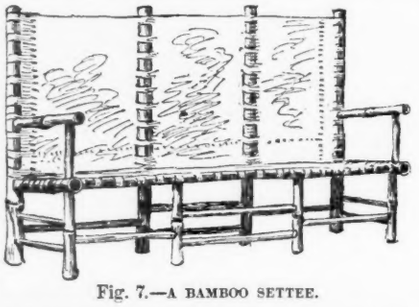


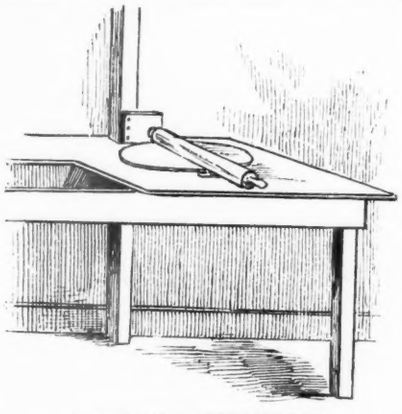
Fig. 7.—A BAMBOO SETTEE.

well stirred about in the boiler. It is not best to leave them actually boiling many minutes, as this will turn them yellow. The whole washing may be done without warm water, if desired, but

more or stronger soap must be used, and the labor is harder. We want to loosen the dirt between the fibres of the cloth as easily as possible, and then to rinse it all away. That is the philosophy of making soiled clothes clean. F. E. R.

A Home-Made Butter-Worker.

I have used the butter-worker described below for four years, and like it very much. My sink is in a little unfinished room, and has a bench adjoining it. About midway of this bench is a joist. A small square piece of board is nailed to the lower part of this joist next to the bench, so that one side projects two and a half inches. A round hole, an inch above the bench, in the corner of the square piece, serves as a socket for the end of the "butter-worker." A little knob, nailed to the



A HOME-MADE BUTTER-WORKER.

bench, acts as a rest for the worker-board, and allows the hand under the edge of the board, to turn it around as the butter is being worked. The edge opposite the hand rests on the bench. The person using it grasps the worker in the right hand, and turns the board, to bring the butter in the right position, with the left hand.

My board is made of maple, and is 14 inches in diameter, and about ¾-inch thick. The worker was made from an old ash-wagon thill, and is 32 inches long, 2½ inches wide, and ¾-inch thick. One edge is beveled down almost sharp, and the other is round. A little groove should be made in the bench, to allow the buttermilk to run off into a dish. Wet both board and worker thoroughly outside, previous to using, to prevent the butter from sticking. L. R., ABINGTON, Mass.

Walking for Health.

It is a pity that women do not walk more in the open air, as there is no exercise better for the health. Household exercise cannot take its place; in-door air is not so pure, and the limits of the house are too small to allow free play of the muscles. A woman who is accustomed to be on her feet almost constantly in the daily routine of the housework, is often a very poor walker; and the good walker sometimes finds herself greatly wearied by the busy house-keeper's round of duties. A friend who lately applied to an eminent physician for counsel in regard to some chronic difficulty of the throat, received as the most important part of the prescription, "plain, wholesome diet, and long walks in the open air." This was because it was seen that an improvement of her general health would put an end to the local trouble. So it is with a great majority of our local ailments; they depend upon the general health. The physician will usually prescribe a "tonic," something to "tone up" the system. The very best of tonics are pure air and exercise, and without these, all others are of little use.

Women suffer a good deal from cold feet, even in summer. Walking is the best thing to cure or to prevent this trouble; not mere sauntering, but brisk walking, fast and far enough to set the blood in motion. FAITH ROCHESTER.

Fancy Work.

Embroidery

Continues to increase in popularity, and ladies can not make a mistake who occupy their leisure moments in embroidering their summer dresses, wraps, or sashes, either in contrasting colors, or in the same tint as the material. Embroidered pattern dresses are so much admired, that in some designs city merchants cannot supply the demand. Gold and silver embroidery is a new fancy, but is so conspicuous that it is more appropriate for curtains, etc., than for wearing apparel, although occasionally a touch of the gleaming threads on the ends of a sash, or brightening a dark border, is very effective. At first, what is called "real gold passing," a thin golden wire, was used, but this is costly, and has been extensively replaced by Japanese gold wire. It is better for applying than drawing through, as it breaks and frays easily. For solid sprays, a filling of yellow card-braid is first laid on and worked over, the veins being put in with silk. This style is particularly suitable for ornamentive Bibles, etc., on plush or velvet, and is much used for ecclesiastical and military embroidery; but the novice who attempts it must be willing to exercise a world of patience, before she can hope to execute this exquisite work with elegance.

A Parlor Table.

A beautiful little piece of furniture for a drawing-room may be made of a pine table, round or triangular, nicely ebonized. To do this, melt a quarter of a pound of best size in a stone pot, with water sufficient to cover it. Do not allow it to boil. Mix a small quantity of lamp-black and a very little blue-black, with oil, into the consistency of paste. Pour the size upon it, and mix all thoroughly together. Apply to the wood while warm, painting it thickly, and when dry, varnish with two or three coats of copal varnish. This will make it a dull, dead black, resembling ebony. The top of the table may be covered with olive or crimson plush, embroidered in pink wild roses or white dogwood blossoms, either in silk or in the pretty ribbon work now in vogue.

An Evening Wrapper.

There are many pretty little accessions to a young lady's toilette that are easily and cheaply made. One of the most useful is a light shawl for the occasional cool evenings of summer-time, when there is a great temptation to linger on the piazzas. These shawls are made of squares of nuns' veiling, cashmere, or camels' hair, a yard and an eighth square, in delicate tints of either cream, white, blue, or pink. The same shade is chosen in Shetland wool or split zephyr worsted. A shell border of worsted is crocheted all round the shawl, and attached by passing the needle directly through the material; this can be readily done, if the hook is fine. A fringe may be added.

A Combined Table and Book Rack.

BY EBEN E. REXFORD.

The wish expressed by one of the family, that books in daily use should be conveniently kept, led me to devise a portable and handy book-rack, which does not take up much room. At first the plan was for a book-rack, and nothing more, but I concluded to add a top to it, and we have a combination rack and table, which is quite an ornamental piece of furniture, and very useful. We have a scroll saw, and the legs were sawed out by the boys, from butternut boards. The entire table is made of butternut, oiled well, and not varnished. Varnished surfaces show every little scratch plainly, and lack the rich appearance of un-varnished surfaces. Across between the legs are fastened shelves for books; two on each side. To the legs casters are fixed, thus making it easy to move the stand about the room or to any place where the family gathers. The top is devoted to papers and magazines. A neighbor has made one out of pine. The legs and shelves are stained to imitate walnut. The top has a covering of pretty cretonne, edged with fringe. Let the boys work at it, and they will soon turn out a most convenient article of furniture, which will be appreciated more and more every day. The children can use it for their school books. Little drawers might be added, like those fastened

TABLE AND BOOK RACK.

to the lower side of sewing machine tables, to hold attachments. These could be used for pencils, pens, ink, stationery, etc., thus adding to the usefulness of the table, and making it a sort of portable library and writing desk. About four inches above the center of each shelf a straight piece of wood runs across from leg to leg, forming a support for books put in from each side.

A Home-Made Tent.

It is easy to make a tent which, if not as pleasing in outline as those for sale in the stores, casts quite as grateful a shadow, and is fully as comfortable. The first thing needed, is a light but firm frame put up in a substantial manner. The cover is made of awning cloth, and just large enough to fit easily over the frame. The top is in one piece, and to it are sewed the side pieces and those for the ends, cut in scallops around the lower edge and bound with woolen braid, of a color to correspond with that of the stripe in the cloth. The pieces must all be sewed together very firmly, and the seams bound on the wrong side. Cords are attached to each corner of the cover, by which it is tied to the frame. If the tent is to stand in a very exposed situation, where there is an entire absence of shade, an extra curtain will be desirable. This should be supplied with rings, and hung on the

A CHEAP LAWN TENT.

side needing the protection from the sun. It should be as wide as the tent, and long enough to reach the ground. Two frames may be put up; one on that part of the lawn which is most pleasant in the morning, and the other in a favorite after-dinner gathering place. If the frames are of the same size, one cover will do for both. In this way, two tents can be made with but little more trouble and expense than one. M. B.

A Gallant Boy.

BY ISABEL SMITHSON.

In a quiet corner, a little back from the road, four boys sat making masks out of large leaves. Two round holes for the eyes, a long slit for the mouth, and another hole right in the middle for the nose to come through; it seemed easy enough, but it was provoking that the leaves would split and tear so, the minute a person tried to put them on! At last they were done, however, and the boys went marching up and down, and wished

that some one would come by, so that they could try the effect of their masquerading.

"Oh, Willy," said Dick Davis, the eldest boy, suddenly, "I tell you what let's do. Let us be robbers, for there come May and Kitty Marston with something in a basket, and they're such mean girls—they wouldn't give me one of their rose-buds yesterday when I wanted it—not even one!"—"Yes, they watch that old rose-bush as if it grew diamonds," echoed Willy, who was Dick's brother, and never much behind him when mischief was afoot.—"They won't know us at all, and Kitty will be frightened out of her senses," said Jack Rogers, delightedly, but they all lowered their voices as Archie Atwood, who had been at a little distance, turned and came towards them. "He'll say no, you may be sure," whispered Jack, "for he is always so slow and poky. Arch, we're going to have lots of fun with our masks—you'll join?"—"Yes, what is it?" said Archie, taking off his mask to get some air.—"Oh, there is no time to tell you now. Quick, fellows! Hide in these bushes," cried Jack, and the four popped down out of sight.—"You won't be a tell-tale, Arch, I hope," whispered Dick; "if you don't want to help us, you must just keep still," and the other answered, in surprise, "I'll not tell of you, but ——"—"Hush—sh!" said the three all at once, and just then down the road trotted little six-year-old Kitty Marston, while her sister, who was five years older, walked along more quietly, with a basket on her arm.

At sight of the three boys in green masks, rushing out from the bushes, howling and shouting, poor little Kitty was indeed nearly "frightened out of her senses," and she ran away as fast as she could go, Jack after her in high glee.

The other two boys put themselves in front of May, and ordered her to give them whatever was in her basket. "It's roses, and you musn't touch them, boys," she answered, trembling, "they're for something very particular."—"If you don't choose to give them up, we'll take them," said Dick, fiercely, and at the same time he snatched at the handle of the basket, nearly pulling May over, and scattered the flowers on the ground.—"You rude, wicked boy!" she cried, "aren't you ashamed to spoil lovely roses, the first ones this year?" While she was speaking, Willy caught her roughly by the shoulders, and Dick struck her arm away from the basket, but just at that moment he was tripped up and thrown to the ground backwards, and Willy was seized by his coat-collar and sent spinning round until his head whirled.

When the two "robbers" picked themselves up, they saw May sadly gathering up the bruised, spoiled roses, while Archie, the "slow and poky" boy, had thrown off his coat and doubled his fists, as if expecting an attack. Willy and Dick did not feel like fighting, however, so they turned away after saying sullenly: "You said you'd join us, Arch Atwood; now I suppose you'll go and tell."—"No, I shan't tell," said Archie hotly, "but I'll never join with boys who are cowardly enough to strike a girl."

A little way down the road the robbers met their companion, and the three went home across lots in a very sulky mood. As they neared Dick and Willy's house, they began creeping along in the shadow of the fence, and were surprised to see their elder sister talking very excitedly at the gate with a neighbor. She said: "When Kitty Marston came running in, half out of breath, and saying that some big boys in masks had chased her and May, and stolen their roses, I did all I could to make her whisper, but she was too scared to mind me, and soon Mamma came in from the next room in a great fright, for Bessie had heard all, and was crying fit to break her heart. We could not make her stop, and I sent Kitty directly for the doctor. Oh, dear! I wish he would come."

Now, Bessie was Dick and Willy's little sister, the favorite of the whole village. Two months ago she had hurt her eyes with a pair of scissors, and had worn a bandage over them ever since; and the doctor had said that if they were not taken great care of, she would be blind the rest of her life. Above all, she must not be allowed to cry, for tears would injure her eyes more than anything else. The boys knew all this, and their hearts sank as they listened to Fanny's words.

"But why did she care so much about the roses?" asked the neighbor.—"Well, it was a great secret of the children's, Bessie's and the two little Marstons. Dr. Grey said Bess could go out without the bandage to-morrow morning, her eyes were so much better, and Miss Elton, the new teacher they are all so fond of, was going to stop here and take Bess to the school-house. It will be Miss Elton's birthday, and the three children were to give her these roses. May has been watching them for weeks, as they are the first this year, and very fine ones—poor Bess is so dreadfully disappointed."

Just then the doctor, with little Kitty, drove up, and he went into the house looking very serious. Fanny followed him, May and Archie arriving a few minutes after; and when every one else had gone in, the three boys looked at each other without speaking, then walked slowly round to the back door. They found the kitchen quite empty, but in the sitting-room their grandmamma and Fanny were waiting anxiously to hear what the doctor would say. Papa and mamma were with him in Bessie's room. May and Archie stood near the doorway, the girl still carrying the basket of mangled roses on her arm. Little Kitty looked half-frightened at the sad faces around her, but no one spoke, only the tall old clock in the corner seemed to be saying, "Blind, Bess, blind, Bess," over and over again. The three boys sat down at the kitchen window, and looked out into the garden, feeling very miserable, for they loved their little sister dearly. Bessie's pet kitten came and rubbed itself against their feet, and looked up, mewing because they did not notice it, while her big doll, sitting on the window-sill, stared at them persistently, as if it knew what they had done. How slowly the minute-hand moved round, and how plainly the old clock spoke! It seemed strange that no one else understood what it was saying, for it looked straight at the guilty trio with its time-worn face, and kept repeating, "Your, fault, your, fault."

Drawn and Engraved for the American Agriculturist.

At last the doctor came into the room. Fanny smiled as he spoke to her, and grandmamma took off her spectacles and wiped her eyes. Then mamma came to get the roses that Bess wanted "to smell and feel," for, alas! that bandage must not come off for another week, at least. She had waited so patiently, though so longingly, for the day when she could go out and see the sunshine and flowers and all her playmates again—poor little Bess!

Pretty soon Dr. Grey came and talked to the other children. "If there is any one in the world I despise, it is a coward," he began, "and I have

just heard that some boys stopped a little girl in the road not very far from here, and went so far as to strike her because she tried to save her roses. She is not sure who they were, as they were masked—being ashamed to show their faces." May and Archie looked up at the doctor without speaking, and the other three boys looked at the floor and wished they could go through it into the cellar. "I should so enjoy thrashing those mean, cowardly fellows," continued Dr. Grey, "that I will gladly give a dollar bill to any one who tells me their names." No one answered. "This money," said the doctor, taking it out of his pocket, "will buy a fine album and fifty foreign postage stamps at the shop next the post office." Archie had long wanted an album, but had not enough money to buy one. The other boys knew that, and trembled. But Archie had promised not to tell. The doctor waited a minute, and then, as no one spoke, he got up, but when he reached the doorway, turned round, asking: "Well, does any one know the name of the boy who took the little girls' part?"

"Archie Atwood! It was Archie!" broke in May, joyfully, and a few minutes afterwards the surprised and happy boy was seated at the doctor's side, driving merrily along to the shop next the post office.

"We'll never, never be robbers again," said the other three. Let us hope that they kept their word.

The Doctor's Talks.

I am always glad to have you—which means girls as well as boys—write and tell me what you would like to have me "Talk" about. A young friend asks about insect changes. In a single line he wishes to know about

Bees, Bugs, and Beetles.

There is something so striking about the changes of insects from one form to another, that I do not wonder that they interest my young friends. What

Fig. 1.—THE STRAWBERRY FLY.

fairy story can tell of a more wonderful transformation than that of a repulsive caterpillar, which feeds on our choice plants, to a butterfly, with its beautifully painted wings? These changes, which all insects undergo, are not generally understood. Every insect (save some plant-lice which are born alive)

Comes from an Egg,

laid by a parent insect. They are not bred, as ignorant persons suppose, by decaying substances. These only afford the parent insect an attractive place in which to lay her eggs. Nothing about insects is more wonderful than the way in which they provide for their young which they will never see! The parent insect places her eggs just where the young, when hatched, will get the food they need. What is most wonderful, some bees sting other insects in such a manner as to stupefy, but not kill them, and place them in the cell where they lay the egg, that the young, when it hatches, may have something to feed upon. There are

Seven Orders or Families of Insects,

which are grouped according to peculiarities of their wings. As we have started with "Bees, Bugs, and Beetles," we will keep to these, except to say that the most showy and noticable family, that which contains the

Butterflies and Moths,

is called the *Lepidoptera*, a word which means "scale-winged." If you touch a butterfly or a moth, a fine dust will leave the wings and stick to your fingers. If you examine this apparent dust with a microscope, you will find it made up of beautiful but very minute scales, some of which look like feathers. But we may talk of these another time; let us now keep to the three kinds with which we started. Firstly, let us understand that every insect, of every kind, goes through certain changes. The entomologist calls these,

Egg, Lavra, Chrysalis, and Imago.

The egg being laid, the parent usually dies. The egg hatches, and we give the young the various names of grub, maggot, and caterpillar. In common language, insects in this state are generally called "worms," though they are nothing like proper worms. It is in their larval or "worm" state that injurious insects, as a general thing, do their mischief, for then they make their growth, and are great feeders. When the larva has grown to its full size, it usually goes to rest for a longer or shorter time. It often spins itself a web, sometimes it makes a place in the ground, or it may merely throw off its last skin, and appears in a very different shape from its former one. After remaining for a time in this condition, in which it is called

Chrysalis or Pupa,

its skin is broken, and it comes out as the Imago, or perfect insect. What can be more unlike the repulsive "worm" of the parsley than the beautiful black butterfly that grows from it, with its yellow and blue spots? The fairy who, in the story, made Cinderella's chariot out of a pumpkin, did not work a more wonderful transformation.

Bees, Wasps, Ants, etc.,

are classed by entomologists as *Hymenoptera*, a word which means "membrane-winged." They have four wings, the upper pair usually much larger than the lower. These insects are often provided with stings, as many a boy who has disturbed a "yellow-jacket's" nest knows to his sorrow. The insects of this family are regarded as the most intelligent of all. They provide for future wants by laying up stores of honey, etc., and often live in communities, where each works for the common good. The engraving, fig. 1, shows an insect, the larva of which feeds on the leaves of strawberry plants. This is given to show the general appearance of insects of this family.

Fig. 2.
MATURE CHINCH-BUG.

The Bugs.—What is a Bug?

In common language, most insects are "bugs," just as most larvæ are "worms." But the true bugs form a family by themselves, the *Hemiptera*, a word which means "half-winged." Some very unpleasant insects belong to this family, the

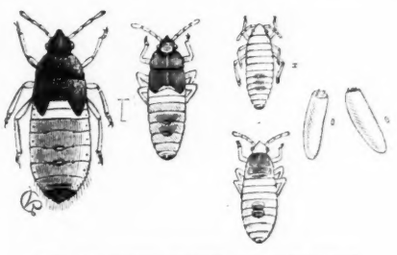


Fig. 3.—YOUNG STAGES OF CHINCH-BUG.

Squash-bug, the Bed-bug, and that insect often so destructive in the grain fields, the Chinch-bug. They have beaks, by means of which they suck the juices from plants, and thus kill them. In the larval state they are not very much unlike their perfect condition, as shown in figure 2. Figure 3 gives the Chinch-bug at various ages.

The Beetles

make up the family of *Coleoptera*, a word which may be translated as "shield-winged" insects. Their larval state, usually that of a soft grub, is very unlike that of the perfect insect. How unlike is the June-beetle, or Dor-bug (fig. 4), which bounces about the room on summer evenings, to the lazy, fat "White-grub," fig. 5, that is turned up by the plow or spade! This insect lives underground for three years in the grub state, feeding on roots, and at length appears as a beetle. The

Fig. 4.—JUNE-BEETLE.

Fig. 5.—THE WHITE-GRUB.

destructive Colorado-beetle or "Potato-bug," of the same family, undergoes its changes in a few weeks.

I hope that my young friends will watch the various insects they meet with, and observe their changes. They will find that all insects are not injurious. Among the beetles, for example, the Lady-bugs are useful, especially in the larval state, when they destroy plant-lice and other injurious insects.

THE DOCTOR.

The Tadpole and the Caterpillar.

BY AGNES CARR.

In a shallow pond, where white and yellow water lilies spread their green "pads" on the top of the blue water; there once lived a jolly little tadpole, with a very round body and a flat tail; and he was as merry as the day was long; chasing the flies that skimmed along on the surface of the pond, and playing "hide and seek" with the minnows in and out of the long twining lily stems. Every morning, a fat little caterpillar, who lived on the top of a bank near by, came down to make a call, and they were the best of friends, together with a snail, who took a daily walk up and down the shore, carrying her tiny house on her back, being afraid to leave it at home for fear of robbers. The tadpole's name was Thaddeus Pollywog, and the caterpillar's Catherine Grub; but they were always called Taddy and Catty for short; while the snail was known as Moll, or Moll Lusk.

One fine morning, these three friends were warming themselves in the sun.—Taddy, floating on the top of the water; Catty sitting on a stone, and Moll Lusk lying on the sand at the very edge of the pond. They had been very quiet for some time, watching the white clouds that drifted across the blue sky; when the snail suddenly popped up her head, waved her horns and said: "I have been thinking," she said, "how much better off I am than either of you. Taddy cannot come out of the water or walk; Catty cannot leave the land or swim; while I can do both. Then too, I have this nice shell, which I can use either as a house or a boat. Do you not wish you were both snails?"—"No, indeed," said Taddy, "I should not like to drag that heavy thing wherever I went, at all. But I would like to have a pair of legs so I could jump up the bank, and see what is on the other side."—"I would rather have wings, and fly wherever I wished," said Catty, "like that dragon-fly over there. I wonder where she got them."—"I don't know; wish I did," said Taddy, turning a somersault, and landing on his head, which made Catty laugh until her sides ached.—"Suppose we go to my cousin, the crab, and ask him," said the snail, "he knows everything."—"All right," said Taddy, "and perhaps, too, he can tell me how to get a pair of legs." So saying, he darted off, and was halfway around the pond before the snail and caterpillar had gone two inches, and had to wait for them to come up. Moll and Catty walked very slowly, for the snail was stiff, and had a load to

carry; and the caterpillar was fat, and had no backbone to support her. At last they reached the home of the old crab, who, being a bachelor and a hermit, lived all by himself in a cave in the bank. Moll knocked at the door, and out came the crab, looking so fierce, that Catty's hair stood up on end, and she shook like a spoonful of jelly, when she saw his big eyes and long claws; but he spoke very politely and said: "Glad to see you, cousin Moll Lusk, and whom have you brought here?"—"These," said Moll, "are Master Pollywog and Miss Grub; and they have come to ask, if you can tell them how to get legs and wings."—"Ah! hum?" said the crab solemnly, "that is a question that few could answer; but I can, for I know every thing." At which the snail nodded her horns, as much as to say: "I told you so." Taddy became quite excited, and Catty trembled more than ever. "You, master Pollywog," continued the crab, "need do nothing but eat plenty of young spring flies, and stretch yourself well every day; and before long you will be able to run and jump with the best."—"Thank you, sir," said Taddy, "I can easily do that, for I am always hungry."—"And what must I do?" asked Catty in a low voice.—"You, my dear," said the crab, "I hope, know how to spin."—"Oh! yes sir," said Catty. "I learned when I was a tiny little 'pillar.'—"Then, go home, and spin a nice silk quilt; wrap yourself up in it snug and warm, and go to sleep. When you wake up, I promise you shall have a beautiful pair of wings."—"I will," said Catty, "for I am very sleepy now"—"And I must go back now to my cave," said the crab, "for the light hurts my eyes. Good-bye, children; come and see me when you get your legs and wings." So the three friends went home; and for a long time, Moll and Taddy saw nothing of Catty, for she was sound asleep, rolled up in her silk quilt. But Taddy stretched himself every day, and ate all the young flies he could catch; until at last he began to feel two little legs growing out from his sides; and one morning he stretched so hard, that his skin split all the way down his back.—"Oh! I am cracking in two; I am cracking in two," he cried in alarm; but not so, for his skin slipped off, and when he looked at himself in the water, he was no longer a tadpole, but a beautiful green frog; and away he went, with a hop, skip and a jump up the bank. On the top he met a lovely butterfly, with wings of blue, and crimson, and gold, who came floating slowly by. "Good morning, sir," she said, "you seem to be a stranger; what may be your name?"—"Yesterday I was Taddy Pollywog," said the frog, "now I don't know who I am."—"Oh! Tad, Tad, is it indeed you!" exclaimed the butterfly; "I am Catty. I went to sleep as the crab told me, and when I awoke, I had these beautiful wings. Are they not lovely?" and she flapped them gaily in the sun.—"Very nice," said Taddy, "but only look at my fine green legs! and I can hop at least three inches at a time."—"We have each got our wish," said Catty; "but where is Moll Lusk?"—"Here she is," said a tiny voice, and the snail came crawling over the top of the bank. "Glad to see you so happy, my friends; but do not forget to call on my cousin crab before you leave the old pond, as I suppose you will now want to do."—"Yes, yes," said Taddy and Catty, "we are going to travel now," and away they hurried to the cave of the hermit crab. He smiled as sweetly as he could, and gave them each a claw to shake as he gazed on them with pride, saying, "thanks to me, you are as fine a frog and butterfly as anyone would wish to see."—When they bade him "good-bye," and started hopping and flying off to see the world, they left the nice old crab, standing on the top of a rock, waving his shelly arms in the air, and with a cracked voice calling, "bless you my children, bless you."

The Tug of War.—Charlie F. W., Jefferson, Minnesota. This is a very common name for what used to be called, when we were boys, "French and English." It is a game that does not last a long time, but it is very lively for a time. It requires quite a number of boys and a stout rope. There are two leaders appointed, and each in turn chooses a boy for his side. A mark is made on the ground, and both sides take hold of the rope, of course facing one another. The two leaders are first, and each followed by the boys of his side, the leaders standing at equal distances from the mark. At a signal, the pull begins, each side trying to pull the other across the mark, and the side which pulls the other over wins. This game is a favorite one with passengers on the ocean steamers, and it is quite amusing to see dignified old gentlemen pulling as if for dear life.

Round Robin.

DEAR CHILDREN.—The bright, glad summer has come, and I know you are all delighted to welcome it, and are planning to have a lovely time during the vacation, romping in the hay fields, and enjoying all sorts of out-door sports. If you meet with any funny little adventures, or come across any curious insects or animals in your wanderings through the "merry green woods," I shall be glad to hear of them, for the amusement of other little folks, so keep your eyes open.

A sister and brother, Mary and Hally Crain, who live in Washington, Iowa, have sent me a joint letter, but I suspect that Mary had the chief hand in composing and writing it, as she is the elder. Hally has a colt for a pet, and Mary says: "I have a calf named 'Starry,' because she is all over spots like stars, and two pet pigs, 'Spot' and 'Zip,' that are so *cute!* We have also two big Plymouth Rock roosters; one we call 'Ingersoll,' the other is 'Beecher.' They are so big, we wanted to name them after big men."

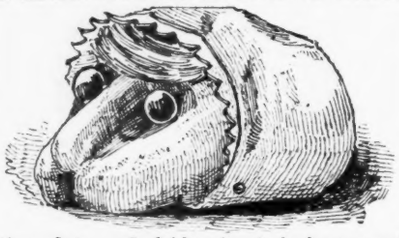
One little girl writes that she found some Easter flowers about the 1st of April. The season has been so backward, I imagine very few wild flowers were in bloom before that date.

Mary Tomes, of Danville, Iowa, says: "We have a dog named 'Shep,' and he plays hide and seek with us; also two playful Maltese cats. I would like to see Nettie Woodward's Alderney calf, for I think it must be the nicest pet of all."

A very nice note has been received from a wee girl, only six years old—Mamie Jessie Gidley, of North Dartmouth, Mass. She says: "I have not seen a dandelion this spring, but I have seen more than one crocus in my mother's flower-bed." Mamie's father says of his little daughter's letter, that "the penmanship, composition, and spelling are entirely her own," and they are certainly creditable to such a little girl. ROUND ROBIN.

A "Peppery" Face.

Not long ago we found on our office table a pod of the common garden pepper, dressed up to resemble—well, what do you think? The engraving is an exact reproduction of the general appearance of the dressed fruit as it was left for our consider-



ation. It is wonderful how two tacks for eyes, and a little red flannel for a hood, with proper edging and some tow, will transform a simple ripe red pepper into a very odd-looking thing.

Balloons.—The Fourth of July.

We some time ago advised our young friends to make their preparations for celebrating "The Fourth" well in advance. Some have asked us about balloons for the celebration. We would not advise very young boys to undertake to make or to send up balloons; indeed older persons, unless they have had some experience, or seen others inflate and set them off, will find that it requires care and skill. Balloons are now sold at the city toy stores at very low prices, when we consider the work required to make them. The old way was to heat the air within the balloon with alcohol, burned on a sponge or a lock of cotton. The balloons now sold have attached at the mouth a ball of very fine shavings, the material called "excelsior," and used for packing, stuffing furniture, etc. This is soaked in melted *paraffine*, a wax-like substance that burns very readily. By holding the balloon erect and lighting this ball, it soon fills and goes off with but little trouble. We have found that this ball, especially on small balloons, is two or three times as large as need be, making it too heavy, and it is necessary to cut a part of it away.

Illustrated Rebus No. 493.—Good advice for both old and young in pictorial form.

Answers to Puzzles in the May Number.

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R E A D
E N D
I T
D

OCTAGON.

M E W
P A P A W
M A R I T A L
E P I G E N E
W A T E R E D
W A N E D
L E D

DIAMOND.

T
P A W
T O N I C
P O L A R I C
T A N A C E T U M
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C I T E D
C U T
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B. W. BENTLY."

"CLINTON, IOWA, April 29, 1881.

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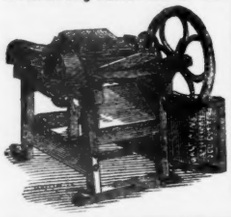

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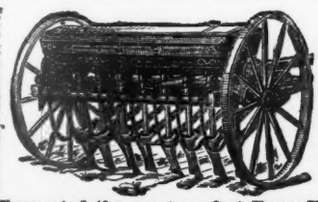

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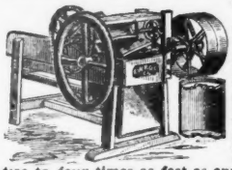

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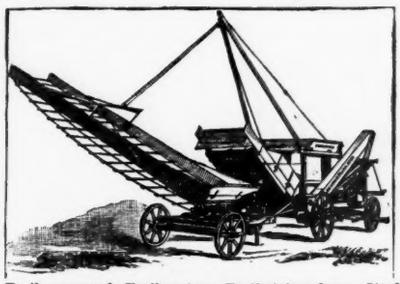

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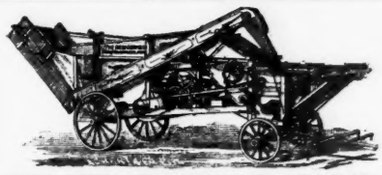

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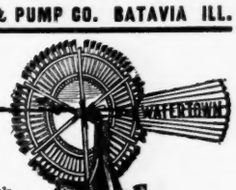

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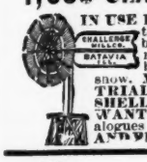

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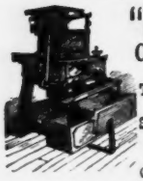

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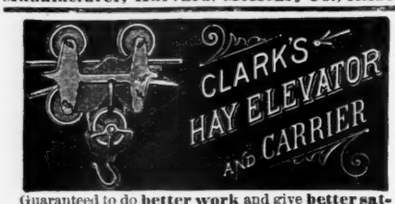

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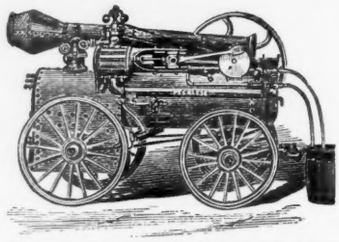

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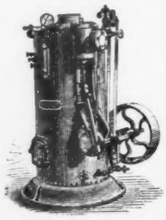

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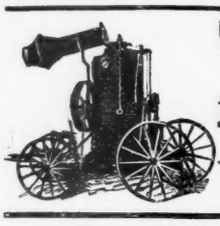

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SHROPSHIRE SHEEP—Season 1883.

The GREAT PUBLIC SALES of these most fashionable and profitable SHEEP in England are held in Birmingham and the neighborhood, commencing August 2nd, when

2,000 RAMS and RAM LAMBS, and 6,000 EWES and EWE LAMBS

WILL BE SOLD BY AUCTION, BY

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This breed is now the most sought after, and realizes by far the highest prices of any in the United Kingdom; it is in the greatest favor with the butchers and consumers, and the most valuable for crossing purposes.

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Reports of last year's Sales, and every information sent on application to Lythall and Mansell, Birmingham, or Shrewsbury, England, who will also faithfully execute commissions to purchase all classes of English stock. References given to Breeders in the United States who have had transactions with the firm.

CREAM.

TWO METHODS OF PRESERVING IT.

One is Uncertain; the other Certain.

Prof. S. W. Johnson, of Yale College, and the Conn. Agricultural Experiment Station, says: "REX MAGNUS Does All that is Claimed for it."

"Cream," says Webster, the Dictionary man, "is the best part of anything; the unctious, oily substance which rises and forms on the surface of milk." As is well known it is the most delicate, and therefore the most perishable of all farm products.

To save cream, it has heretofore been deemed necessary to churn it, and thus convert it into butter, which, in turn, will ultimately turn rancid. This custom of preservation, therefore, must be called *uncertain*.

Let us examine the other, and, comparatively modern process, which *saves* cream, and for an *almost indefinite* time; enables it to retain all of its natural flavor and sweetness; is cheap; practicable, and, indeed, *the process* so long sought by scientists, dairymen, and the cream consuming public. It is Rex Magnus, the Humiston Food Preservative, that *will* do it for either cream or milk as well as meats, poultry and food of all kinds.

A SOLID TEST.

Prof. Samuel W. Johnson, the noted chemist of the Scientific Department of Yale College, procured cream from a farm 3 miles north of New Haven, Conn. It had been collected and saved from *five milkings* of the three days previous, and was, therefore, *being so mixed*, very difficult to keep.

HOW IT WAS DONE.

A pint of water was treated with "Pearl," a special brand of Rex Magnus, adapted specially for the preservation of cream. After treatment it was placed in a glass jar and sealed, at 3 o'clock of the afternoon of January 31st, 1883, and at 5 P. M. (or 2 hours later) *of the same day*, the *untreated portion of this cream was found to be sour!*

SEVENTEEN DAYS TEST.

At the banquet held at the New Haven House, 17 days thereafter (long enough to send all over Europe), this jar of treated cream was opened, and the contents were (with the exception of a slight mold on top) found to be *perfectly natural and sweet*, whilst it rendered the *coffee luscious*. The average temperature of the apartment (Prof. Johnson's private laboratory) in which this cream underwent this test, was 70 degrees Fahr.

PROF. S. W. JOHNSON'S ENDORSEMENT.

He had, of course, exclusive control of this experiment with cream, as well as all kinds of meats, &c., and the following is the pith of his report, leaving out the details:

THIRTY-FIVE DAYS TRIAL.

"My tests of 35 days in daily mean temperature of 70 degrees, on meats, cream, &c., bought in open market, have certainly been severe, and I am satisfied that the different brands of Rex Magnus, The Humiston Food Preservative, with which I have experimented, *have accomplished all claimed for them.* So far as I have yet learned, *they are the only preparations that are effective, and at the same time practicable*, for domestic use."

Rex Magnus is *safe, tasteless, pure*, and Prof. Johnson adds in his report: "I should anticipate no *ill results* from its use, and consider it *no more harmful than common salt.*"

KEEPS THIRTY TO FIFTY-NINE DAYS.

Edward Burnett's Deerfoot Farm cream has been sent to Europe to different responsible people, who report that from *thirty to fifty-nine* days after it was treated with "Rex" in Boston it was eaten in England, Italy and Switzerland *sweet* and *perfect!* Six jars were consecutively opened and used by Joshua Blake, Esq., of Boston, on a recent trip to the Mediterranean, in the steamer Archimide of the Florio line of Italian steamers, and the *last was as good as the first.*

HOW TO DO IT.

The special brand of Rex Magnus adapted for the preservation of cream is called "Pearl." This brand is made very concentrated in order to do what it claims. It is advisable to use milk to dissolve it in, as this increases the quantity of cream, which has a slight tendency to thicken. If kept over ten days a half pint of fresh milk may be added to each quart of cream, before putting on the table. If a slight mold should appear it will do no harm. *It will do all that is claimed for it*, and a trial will prove this statement.

HOW TO GET IT.

A trifling expenditure on your part will establish this fact to your entire satisfaction. You do not have to buy a county right, nor a costly recipe; *we sell neither the one nor the other.*

SAMPLES MAILED POSTPAID.

We do offer, however, to supply you—in case your grocer, druggist or general store keeper hasn't it on hand—to mail a *sample* pound box of the "Pearl" brand of Rex Magnus, which is prepared especially for cream, on receipt of the price, $1,—or of the "Snow Flake" brand, for milk, &c., on receipt of fifty cts. The other brands are, "Viandine," for preserving meats, poultry and game, 50 cts. per lb; "Ocean Wave," for preserving oysters, lobsters, &c., 50 cts. per lb.; "Queen," for preserving eggs, $1.00 per lb.; "Aqua Vitae," for keeping fluid extracts, &c., $1.00 per lb. Samples mailed on receipt of price, except Aqua-Vitae, which is put up in bottles.

WILL BRING GOOD PROFITS!

The popular favor and acceptance which will doubtless follow this great food preservative, are subjects entitled to receive serious contemplation and investigation, as the keeping of cream and milk for long shipment is a matter, where in a large profit can be made. *Where others fail this succeeds.* Mention this paper and address

THE HUMISTON FOOD PRESERVING CO.,
72 Kilby St., Boston, Mass.

OUR BASKET.

After many years of vigorous service Mr. Orange Judd retired some time since from participation in the business management of the Publishing House bearing his name. His prolific pen will hereafter contribute more frequently than during recent months to the various departments of the *American Agriculturist.*

ORANGE JUDD COMPANY,
Publishers, 751 BROADWAY, NEW YORK.

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American Cottages.—Consisting of 44 Large Quarto Plates. W. T. Comstock. Within a few years, so great a change has taken place in House Building, that a work representing prevailing styles must receive considerable attention. The work before us contains designs from a large number of architects of different sections, and illustrates very well the present ideas on Cottage Architecture. It is not devoted to elaborate structures, but to low-priced houses, and is a good exhibit of artistic feeling in their treatment. That a moderate outlay is consistent with good taste in building, we have always held, and we are glad to see such a work as the present, as it will tend to advance the standard of taste in this class of buildings. It is handsomely bound, and quite a novel effect is obtained by the use of two colors of bronze on the cover. One large quarto volume. Price, post-paid, $5.00. Supplied by Orange Judd Co.

Barry's Fruit Garden.—By P. Barry. New Edition. Revised and brought down to date by the Author. New York: Orange Judd Company. Price $2.50. The only fault with this work is its title. Nowadays a "Fruit Garden" is regarded as a garden devoted to the culture of the small fruits. While the work includes this, it covers a much wider ground. If, with a knowledge of its contents, we were asked to make a descriptive title for the work, we should endeavor to fix upon one that would express the following: "Fruits of all kinds, whether produced by trees, shrubs, or other plants, beginning with their propagation, their treatment in the nursery, their final planting, and subsequent cultivation. Also the gathering of, and packing of the fruit for market. To which is added a select descriptive list of the approved varieties of each kind of fruit." It might be difficult to fix upon a brief title that would include all this, yet such is the comprehensive scope of the work. It is well known that the author is a member of one of the oldest and most important nursery firms in the country. Some nurserymen, in writing articles for the public, stop short of telling what are regarded as "trade secrets." There is nothing like this in the present work. The author is a successful nurseryman, and his aim throughout is to point out to others the methods by which they can attain to success. There is no secrecy, no withholding of details by saying, "this can only be learned by practice," but all is as plain and direct as is the author himself to those who have the pleasure to know him. This "Fruit Garden" is the only work that exactly covers the same ground. Other works on fruits treat upon nursery practice incidentally. In this it is the leading feature. The starting of fruit-growing trees, shrubs, etc., from the beginning, by the methods followed in large commercial establishments, occupies a large part of the work. We know of no other treatise in the language where this information can be found in anything like the details given to it here. While it is a guide to those who would take up the growing of nursery plants as a business, it is not the less useful to the amateur. The principal work for the new edition has been in revising the lists of fruits of various kinds. Our lists of apples, pears, and other fruits have now become so large, that the novice is puzzled as to what varieties to plant. Compact, well considered lists, revised by one so thoroughly competent as the author, give the present edition a special value. Much thought has evidently been given to this portion of a work which will long remain a standard for American fruit growers.

The Driven Well Patent Declared Void.

The U. S. Court Decision which Favorably Affects 50,000 Property Owners in One State Alone.

As briefly announced in the June number of the *American Agriculturist*, the celebrated Driven Well Patent, granted to Col. Nelson W. Green, in 1868, was recently declared invalid by the United States Circuit Court for the Southern District of Iowa, sitting at Des Moines.

Over 300 causes were pending in this Court, principally against farmers, for alleged infringement, and a very large number of similar suits were pending in the District of Minnesota, in which the issues were substantially the same. For convenience, it was arranged that the causes should be heard at the same time before the Judges of the Minnesota District and the two Iowa Districts, sitting together. Accordingly a hearing was had last October, and the questions at issue were very elaborately presented. At that time there was pending before the Supreme Court at Washington, an appeal from the District of Indiana, involving this same patent. Judgment of the Court at Des Moines was withheld until the opinion of the Supreme Court should be announced, in the hope that a final and authoritative determination of the more important questions might be reached. The Supreme Court, however, stood equally divided in that case, and no opinion on the merits was announced. The Court at Des Moines therefore proceeded to carefully consider the case at considerable length, in two opinions by Judges Shiras and Love, against the validity of the patent, and in an opinion by Judge Nelson, in which he dissents from the views expressed by the other two, the result of which was to dismiss the complainant's bill with costs.

The Defence of Abandonment.

The Court consider first the defence of abandonment, and say that vigilance is necessary to entitle a man to the privileges secured under the patent law. He must not only show his right by invention, but he must secure it by the means provided by law; and if the invention becomes known to the public, he should assert his right immediately, and take the necessary steps to legalize it. The only safe rule which can be adopted on this subject is, that where the public use of an invention is known or might be known to the inventor, he must be presumed to acquiesce in such use, and hence to abandon his claim.

From the testimony upon this point, it appeared that Col. Green was engaged in the summer of 1861, at Cortland, N. Y., in organizing volunteers for the army; that his attention was called to the necessity of procuring pure water for the use of his men; that he set about to devise a means by which water could be procured from beneath the surface of the earth, thus avoiding danger from poisoned wells, etc.; that the method devised consisted in driving a sharpened rod into the ground until it reached a water-bearing stratum, then withdrawing the same and inserting a tube, through which the water could be drawn by any ordinary pump. Tests of the method were made near the Colonel's residence, and at the fair grounds in Cortland, where his regiment was encamped. One Graham, the sutler, put one down there in October, 1861, which was used by the men generally. When the regiment left there, Col. Green did not cause this well to be taken up, or to be in any way kept from public use or knowledge; on the other hand, he made provision for the use of these wells wherever the regiment should go, and procured materials and transportation from the Government for the purpose. His own testimony is, that he explained his invention to his subordinate officers and to his drill squad; that he consented to the sinking and public use of the well at the camp ground, and that he never cautioned any one to keep the method a secret. There is nothing to show that he ever mentioned to any one the idea of obtaining a patent. On the contrary, everything that he did tended to spread the knowledge of this mode of making wells, without any intention on his part to restrict the right to make and use them to himself as a patentee. This was in 1861. He did not apply for a patent until May, 1866, not until his attention was called to the fact that through this method of driving wells, other parties had reaped large benefits. This delay of over four years gave the public rights through the open use of the discovery. To constitute a public use, it is not necessary that more than one of the driven wells should be publicly used (104 U. S., 333). There can be no question that Col. Green allowed his invention to go into public use without an immediate assertion of his rights.

Conclusions of the Court.

The Court therefore find, as conclusions of fact:

1. That in 1861, Col. Green's purpose in devising his method of driving wells was to furnish a ready means whereby the men of his regiment could procure a supply of pure water, and that he did not at that time contemplate procuring a patent therefor, and that he put his method of driving wells into public use in 1861, for the benefit of his regiment, and thereby dedicated or abandoned his invention to the public.

2. That his invention was in open and public use, with his knowledge and acquiescence, for more than four years before he applied for a patent thereon.

From these conclusions of fact, it necessarily follows, as a matter of law, that the patent must be held void.

The Court next proceed to consider the claim raised by defendant, that the re-issued patent is broader in its terms than the original patent, including improvements and principles not contained in the original specifications, and is therefore void. Upon this point the Court conclude that the principle of the vacuum, which is now claimed to constitute the chief features and merit of the driven well, was not included nor contemplated in the claims under the original patent. Col. Green himself, in describing his original device, said: "My invention consists in driving or forcing an iron or a wooden rod, with a steel or iron point, into the earth until it is projected into the water, and then withdrawing the said rod and inserting in its place a tube of metal or wood to the same depth, through which and from which the water may be drawn by any of the usual well known forms of pumps." There is not to be found in any part of the specifications any reference to a vacuum, nor any mention of atmospheric pressure created thereby. In all the evidence introduced, it is not shown that Col. Green, in making his experiments in 1861, contemplated or conceived of the idea that the tube should be made air-tight, so as to create a vacuum, and thereby utilize the atmospheric pressure. He set up no claim of the sort, nor did he make even remote or indirect mention of it in the specifications attached to his original patent, and hence the original patent cannot be construed to embrace the application of the principle of the vacuum. But in the re-issued patent, the specifications cover broader and somewhat different ground, as follows:

1. The process of sinkin wells by forcing down a rod or tube to the water-bearing stratum, without removing the earth upwards, as in boring.

2. Creating a vacuum in the tube forming the lining of the well, by making the tube air-tight, except at the lower end, compacting the earth around the tube, and by attaching a pump with an air-tight connection to the tube.

The main feature of the discovery is claimed to consist in the utilization of the atmospheric pressure, through the creation of the vacuum in and around the tube.

The original patent did not embrace this. The re-issue then claims the application of an important principle not found in the original. A re-issue can only be granted for the same invention which was originally patented; if it goes beyond this, it is void. (1 Wallace, 531; 102 U. S., 408; 104 U. S., 350.) It follows that Col. Green's re-issued patent must, for this reason, be held void.

Not an Original Invention.

Upon the question of originality of invention by Col. Green, the Court find, out of the mass of evidence adduced upon the point, two well authenticated instances of the use of an anticipating device; first, at Independence, Iowa, and second, at Milwaukee, Wisconsin, by E. W. Purdy. The only issue about the well at Independence was as to the time it was put down, the complainants claiming that it was not until 1866, the defendants alleging it to be in 1861. From the testimony of many witnesses who claim to have seen and used this well when the soldiers were enlisting at Independence, for the purpose of entering the Union army, who remember the use of the well at the time of Col. Lake's marriage—not disputed to have been in 1861—and who remember the use of the well by the cricket club which played on the grounds adjoining the lot in which the well was driven, and which club was broken up by many of its members entering the army in 1861, the Court hold as a conclusion of fact:

1. That in the summer of 1861, there was constructed at Independence, Iowa, a driven well which proved a success.

2. That this well was constructed by driving a tube down into the water-bearing stratum, and attaching to the tube a pump, by which the water was drawn up in apparently an inexhaustible quantity.

In regard to the Milwaukee wells, the Court consider carefully the testimony of Mr. E. W. Purdy, which was in substance, that in 1849 and 1850 he was engaged in making wells at Milwaukee, by means of iron rods about two inches in diameter, the lower end being sharpened like a drill; the first rod was about 16 feet long. It was driven into the earth by working it up and down by a rope over a gin-pole, and in this way the earth was displaced as the rod went down. Tubing was driven down as the rod progressed, which formed the lining of the well. No earth was removed upwards. When the tube struck water, if it did not flow to the surface, a pump was used, the tube to which the pump was attached being placed inside the tube first forced down. Many of these wells were thus made.

Comparing this method of driving wells, and its results, with that adopted by Col. Green in 1861, as described in his original patent, the Court confess their inability to see any substantial difference. Green expressly claimed in his original patent the process of sinking wells by driving or forcing down a rod to and into the water under the ground, and withdrawing it and inserting a tube in its place, to draw the water through, and it was just this process in substance that was employed in Milwaukee. The difference was only in minor details. Hence it follows that Green's process was substantially only a reproduction of a method which had been devised and placed to public use fully ten years prior to the time he hit upon the same expedient. It therefore results that the defence, for want of novelty, must be sustained, and the patent held void.

Concurring Opinions.

The opinion of the Court was delivered by Judge Shiras, of the Southern District of Iowa. Judge Love, of the Northern District of Iowa, filed also a separate opinion, in which he fully concurs in all the points touched upon, and adds at some length his own view, that Green should be held to have abandoned his invention, even though he did not know or assent to the use of it during the period between 1861 and 1866, when he applied for a patent. The Act of 1839 was then in force, and according to the Judge's construction of that Act, the public use of an invention for two years even, without the consent of the inventor, is sufficient to invalidate the patent.

Judge Nelson, of the Minnesota District, dissents in a short opinion, in which he says he regards Green as the original inventor of a patentable process, which was duly patented and re-issued; and because, prior to 1870, it was generally understood that a use of the invention for more than two years prior to the application for a patent would not defeat the patent, unless the use was had with the consent of the inventor, which was not proved in this case; and also because the Milwaukee wells were artesian wells, and Green's process was not then used; and because prior use should be established by more than mere preponderance of evidence, and the proof of prior use at Independence leaves fair room for doubt.

The Question Practically Settled.

It is probable that this is practically the end of the driven well litigation. If an appeal is taken to the Supreme Court, that Court cannot be equally divided, as it now has nine members. Justice Harlan, of the Supreme Court, recently denied an injunction in a driven well case at Indianapolis.

All this will be of much interest to the great number of farmers involved in the matter. It is estimated that there are over 50,000 driven wells in New York State alone. The agents of this patent have forfeited all moral right to any sympathy, and it would seem that their legal rights are in a fair way to be properly adjusted. Our advice to farmers is to still resist.

Using the Windfalls.—A friend of ours in Indiana has extensive orchards, which he manages for profit. One of his minor savings is his use of the windfalls, and this, in the course of the year, amounts to an important item. Every few days, after the fruit is large enough to be blown off, they are gathered. Instead of feeding these directly to the pigs, they are ground in a hand cider-mill, the juice pressed out, and the resulting pomace then goes to the pig-pen. The juice, or cider, goes to the vinegar-house, where, while it does not make as good vinegar as the cider from ripe apples, it produces a much better article than is usually sold, and may be mixed with other vinegar to advantage. The gentleman referred to applies business judgment to the management of his orchards, and disposes of their products as seems most profitable. If it is a year in which apples (and he cultivates his orchards and always has fruit) bring satisfactory prices, he barrels his fruit and sends it to market. If the returns show that the fruit is worth more to him at home, the apples are at once converted into cider, and the cider into vinegar. Having ascertained that, as a rule, he can get more for the product of his orchards in the form of vinegar, he has a vinegar-house arranged with every appliance needed for vinegar making. Experience has taught him that in most years vinegar is the most profitable form in which to market even his good apples. But then he has established a reputation for his brand upon both apple and vinegar barrels.

A Package Delivery Company

in Chicago informs one of our subscribers in Allegheny Co., N. Y., by printed postal card, that: "There is at this office at your disposal 1 package, which will be forwarded to you by mail upon receipt of the required charges, 64c. Please give this your earliest attention." The lines: "Said to contain" and "Valued at," at the bottom, are not filled out. As our correspondent, "F. E. P.," says, "this is very thin." He, no doubt, has friends in Chicago; let him write to one of these, giving him an order for the package. If the transaction is an honest one, it will be delivered. If it is not given up, send the 64c. in an open letter to the Chicago postmaster, that he may see that the stamps are sent, and await the result. If the package is not sent, or if it proves to be worthless, the "Package Delivery" can be stopped from using the mails.

Trapping Big Game.

The class of swindlers who operate in a grand style is not a large one. Though they deal with thousands, they take them only from moneyed people, and do not cause so much distress as those who rob the industrious classes of their dollars. One of these wholesale dealers has recently been caught, J. H. Langley, who was concerned in a Guano Company, a Railway Frog Company, and various other companies related to railroad matters. Besides these, he ran a Live Stock Express Co., a Texas Land Syndicate, and various other enterprises. He had an expensively furnished office, where he employed some fifteen clerks, many of whom paid a bonus for their situation. But it all came to an end by his arrest in Boston the other day as a swindler.

Betting on Marriages.

Not very long ago, the circulars of numerous concerns calling themselves "Marriage Endowment Companies," "Marriage Insurance Companies," and the like, were sent us in great numbers by inquiring correspondents. We could only judge of these associations by what they said for themselves. Even allowing the parties conducting them to be responsible, a careful examination of the schemes of these Companies showed them to be mere games of chance; in fact, betting on the marriage of their subscribers. Several States having declared them illegal, we supposed they were all killed, until early in June an arrest in Virginia showed that the swindle was not defunct. The Manager and Secretary of the "Marriage Fund Mutual Trust Association" were arrested at Cedar Rapids, Va. This time the arrest was for using the U. S. Mail for the purposes of fraud.

"Work at Home—No matter where You are Living."

Numerous inquiries come to us concerning parties in New England cities, who offer to ladies and young men desirable "work at home" in coloring photographs. The pictures are called by some high-sounding name, such as "Pearlographs," "Artographs," "Electrographs," etc. The work is "so simple, that a child [age not stated] can do it after a week's trial." Two sample pictures for trial are sent by one concern for $1.00 and two stamps [size not stated]; another offers a "Pamphlet of Directions," with two "nice pictures" for trial, for $1.00 and no stamps. The circulars offer work which, according to description, is easily learned. We are told that "Any lady, when she has learned to make these beautiful pictures, would have no difficulty in earning from $10.00 to $20.00 a week." There is much more in these circulars that is very tempting—so tempting that we do not wonder that cautious ladies inquire about the matter. That the interest is wide-spread is shown by the last two letters concerning the scheme, which are from Iowa and Dakota. In such cases we can only judge by what appears on the surface, and by

TAKING A COMMON-SENSE VIEW.

We find that each of the two concerns warns the public against the other. No names are called, but the red circular designates the concern which sends out the white document in a most unmistakable manner, and the same is done in the other direction. "Red" cautions against "white," "white" cautions against "red." It is not for us to say that both are not right. We are always suspicious when persons go a roundabout way to accomplish a very simple object. Why send photographs from New England to Idaho, Dakota, or even to New Jersey to be colored? If the mere object is to get pictures colored, an advertisement in a Boston, Fall River, Lowell, or Providence paper, making similar offers to those in these circulars, would bring applicants by the thousand. The work could be done as well near home, without the risk and expense of sending the pictures to and from a far distant point. There must be something unexplained.

THERE ARE PHOTOGRAPHS AND PHOTOGRAPHS.

What kind of photographs are those that must be sent away to be colored? "Distance is no objection," we are told. It is also said that the work can be done "in the privacy of your own room." We shall be glad to hear from any lady who is making $20.00 or even a less sum a week, as to what is the "true inwardness" of all this fuss about coloring photographs. Does it all mean "send us a dollar?"

Gambling for Farmers.

If there is an individual in the community having a reputation for honesty, it is the one engaged in farming. The farmer's occupation is an education; he learns as a boy that good seed and good culture, if the season be favorable, bring good crops. If the farmer continues in his honest ways, it will not be because he is not tempted to leave them and "try his luck" in various schemes, which promise to make him rich without labor. But a few years ago, he was offered abundant chances to get rich on "puts and calls" in Wall street, but the most beneficial postal laws suddenly put an end to that source of wealth. Later, Chicago sharpers for a while had it all their own way. Schemes offering most attractive terms were scattered all over the country. The farmer was tempted by uniting in "combinations" (never known to fail) and "running corners," through the means of "Bureaus of Information," to give less attention to the raising of corn, pork and other products, and to invest in speculating on the future prices of these. The Post Office, a while ago, placed a damper on this, by publishing the names of the leading concerns in

THE OFFICIAL LIST OF FRAUDS.

But the thing is too profitable to be suppressed at once, and new circulars appear with new names. A letter to us, from a farmer in Tennessee, inquiring about seed wheat, encloses one of the latest productions of these Chicago operators. There is one man in Tennessee, who wishes to make money on wheat, but he is old-fashioned enough to get the best seed he can find, to stick it into the dirty soil, go through the labor of harvest, take the risks of the weather and insects, and of the prices for the next crop. He might go into a "joint account" of "$25 to $25,000," and he might avail himself of some of "the grandest opportunities to make money on corn," or as "our pork and lard dealers are making a good deal of money," he could join them. For this concern has a "Bureau of Information," more than that, it has "Our Literature," whether, as the wife of one of the celebrated "Day & Martin Blacking firm" claimed, they can say, "we keeps a poet," the circular does not state, but if any one is in need of "A Special Circular on Selling Short," it can be supplied by "Our Literature." That circulars of this kind tempt a sufficient number to make it pay to those who issue them, is probable. They occasionally publish letters from those who make on "wheat deals," but did a lottery concern ever publish a list of the blanks?

It is homely advice "cobbler stick to your last," (we need not give the Latin), but with much observation in such matters, we have never known one who came suddenly into the possession of money by lottery or successful gambling, by whatever name it might be called, who was not unfitted for the enjoyment of his fortune. The future prosperity of our country depends upon the honesty and intelligence of its workers, of whom farmers form so large a share, and it is gratifying to know that so many turn a deaf ear to the temptations to gamble, whether they come from Wall street or Chicago.

"Restorative Remedies."

It is gratifying to note that the number of Medical Humbugs is, of late years, much less than formerly. Some of the perennial kinds, like Inman, with the free recipe (of course furnished in an unmeaning jargon of words), contrive to pay for the insertion of their advertisements in papers which should know better than to publish them. But take Quack Medicines as a whole, very few can be said to have a "boom." A number of our correspondents are just indignant at the

IMPERTINENT AND INSULTING CIRCULARS

of a concern in New York City—Davidson & Co.—who claim to be "Proprietors of Dr. Churchill's Restorative Remedies." This firm sends out, right and left, all over the country, a lithographed circular. This circular begins by stating: "Your name and address having come into our possession"—But how was that "name and address" procured? Temptations are offered to postmasters in small places, and even to school children, to send the "name and address" of respectable people in their neighborhood. Names and addresses, with a certain class, are articles of trade. In one way or another the name and address of nearly every

RESPECTABLE PERSON IN THE COUNTRY

can be bought. This circular states that "We have taken the liberty [and a great liberty it is, to be sure] of enclosing you descriptive circulars of Dr. Churchill's Restorative Remedies, thinking you might be benefited by their perusal. [The impudence of the chaps! What business have they to think about it at all?] Should you, after a careful reading of them, conclude that you are in need of the Remedies, and will fill up the enclosed list of questions [which no sensible man will do], and return them to us, we will forward you a trial package, free of charge, by return mail. We are anxious [no doubt] to introduce them in your vicinity, and feel so sure that you will be benefited by their use [note the assurance and impudence of this!], that you will recommend them to others, thus helping us to advertise them." There is where D. & Co. are weak. People with "private troubles" do not talk about them to others, and are the last persons in the world to engage in the advertising business. This precious circular goes on to say: "If in need of them, we sincerely trust you will accept our offer." And we "sincerely trust" that the offer will not be accepted by any self-respecting man.

An Apology Due Cincinnati.

In another item, in mentioning the inducements offered to farmers for speculating in stocks, provisions, grain, etc., we named only the cities of New York and Chicago. We might have known, from former experience, that in any scheme for making money (for somebody), Cincinnati would be at the front, and not be outdone by any other city, especially Chicago. The Chicago operators modestly call themselves "Commission Merchants," while a man and his brother in Cincinnati claim to be a whole "Stock Exchange." If we were to invest in either, we should favor the Cincinnati shop, for they print more and explain more, and claim that, "The intent and effect of the operations of the Exchange is to do away with the dangers of speculation!" But—and it is very kind of them to say it—"We do not urge any one to invest against their inclinations," still they are "perfectly satisfied that any one who buys shares in the Exchange, will receive large returns for their money." We, on the whole, withdraw our preference for this Cincinnati concern. An Exchange so shaky as to its grammar, is not likely to be sound as to its arithmetic. Still we give the concern the credit of industry. A friend in a Kentucky town writes us that the circular has been sent to every one in the place.

Cautionary Signals.

The Monarch Lightning Saw.

J. M. Pitzer, Orange Co., Fla., contributes to our knowledge of the "Monarch Lightning Saw." The "Company" sent him a postal, asking him, "Do you want to make $5.00? * * If you will write us a good testimonial puff of the machine, will send you $5.00 by registered letter." Mr. P. writes that he has no $5.00 testimonial puffs to dispose of, but if any one wishes a "Monarch Lightning Saw," he can have his for $5.00, and thinks that others can be bought cheaply of his neighbors.

The Portable Electric Lighter,

is the subject of many letters of inquiry. When this affair was first introduced, it appeared to be useful, and was advertised in our columns. It has apparently passed into new hands, who offer it at about a third more than the original price. After a thorough trial, we can only regard it as an amusing toy. Those who understand the laws of electricity, will not find much difficulty in keeping it in order, but for the general public, it is not suited, and when it is once disarranged, it must be sent to the maker or some mechanic skilled in repairing electrical appartus, to be set in running order. If one knows sufficient about batteries, he can keep it in use, but to others it will not prove satisfactory.

Wheat—Corn—Oats—Pork—Lard.

BY ORANGE JUDD.

THE MARKET STILL VARIABLE AND UNSETTLED.

During a month past the speculative fraternity have had the opportunity they always desire, viz., much uncertainty as to the growing grain crops, and as to the supply of last year's products still in the hands of farmers. This element of uncertainty the shrewder, longer-headed and longer-purse operators delight in, as it enables them to fleece the "lambs," of whom there is ever an unfailing supply, just as there are of buyers of lottery tickets where they are allowed to be sold. By skilfully manipulating reports, sent in by their own "reliable" agents scattered through the leading grain centers, they are able to run the price of wheat, for example, down to $1.08 per bushel, when in rush a lot of sellers for a decline. The very next day, perhaps, the price is run up to $1.14 @ $1.15, and kept there until the "shorts" are cleaned out, and then down go rates again, to tempt in a fresh lot of victims.

Chicago being the chief receiving point of both grain and provisions, and the head center of speculation, we give the quotations at that point. The difference in prices in New York depend mainly upon the cost of transfer, though somewhat affected from day to day by the range of local speculation, and the daily demand for export. On June 6th, July Wheat and Corn are just 10 cents per bushel higher in New York than in Chicago; July Oats 6¼ cents higher; July Pork 85 cents per bbl. higher; July Lard 23 cents per 100 lbs. lower.

RANGE OF PRICES IN CHICAGO.

Month of Delivery.	*April 6.*	*May 7.*	*May 12.*	*May 18.*	*May 19.*	*May 23.*	*May 26.*	*June 1.*	*June 7.*
WHEAT, *bu.*									
June	$1.08	$1.13	$1.12	$1.08	$1.15	$1.09	$1.15	$1.15	$1.11
July	.....	1.14	1.14	1.09	1.17	1.10	1.17	1.17	1.13
Aug	.....	1.16	1.17	1 11	1.15	1.12	1.15	1.15	1.14
Sept	.....	.....	1.17	1.12	.....	1.13	1.17	1.15	1.15
CORN, *bu.*									
June	.62	.55	.56	.56	.58	.55	.57	.57	.55
July	.....	.57	.57	.56	.59	.56	.59	.59	.56
Aug	.....	.59	.59	.57	.60	.58	.60	.60	.56
Sept	.....	.....	.60	.59	.59	.59	.60	.60	.56
OATS, *bu.*									
June	.43	.42	.41	.41	.42	.41	.39	.39	.41
July	.44	.42	.42	.42	.42	.42	.39	.39	.40
Aug	.....	.35	.42	.42	.42	.41	.31	.33	.34
Sept	.....	.....	.35	.35	.35	.35	.33	.....	.....
PORK, *bbl.*									
June	18.35	20.15	20.07	19.65	19.60	19.12	19.60	19.60	18.80
July	18.50	20.35	20.12	19.10	19.80	19.17	19.80	19.80	19.00
Aug	.....	20.45	20.32	19.30	19.95	19.27	19.95	19.95	19.12
Sept	.....	.....	20.50	19.45	19.70	19.45	20.00	20.10	19.27
LARD, *100 lbs*									
June	11.40	12.10	11.87	11.75	11.82	11.65	11.82	11.82	11.60
July	11.50	12.12	11.97	11.70	11.92	11.70	11.92	11.92	11.65
Aug	.....	12.05	12.07	11.82	11.85	11.80	11.85	11.85	11 15
Sept	.....	.....	12.07	11.72	11.82	11.65	11.80	11.80	11.10

For May delivery, Wheat on Jan. 2d was $1.00; Corn for May delivery was 52c. Jan. 1st, and 58c. Feb. 2; Pork for Feb. delivery was $17.55 per bbl., or $1.45 less than now; and Lard $10.05, or $1.62 per 100 lbs. less than now.

From Chicago to Liverpool, the present cost of carrying a bushel of wheat is reduced to 15 @ 17 cents, a distance of over 5,000 miles, if taken by water from Chicago to Buffalo, and 4,600 miles if by railway, calling the ocean route about 3,600 miles from New York to Liverpool. Wheat is now being shipped across the Atlantic in steamers for 2½d., or hardly 5 cents a bushel. So wheat costing $1.10 in Chicago, can be laid down in Liverpool for $1.25 @ $1.27 per bushel. This low rate has a tendency to largely increase the consumption of wheat in England, and accounts in part for a GAIN in exports of thirty-six million bushels, noted below. If the speculators will keep their hands off, the foreign demand will be likely to drain off our surplus pretty closely, and leave a fair field for the incoming crop.

BREADSTUFFS AND PROVISIONS SENT ABROAD.

The following figures are interesting, as showing how much more WHEAT and CORN we have been able to spare, and the people over the ocean to buy of us for the nine months ending June 2, 1883, than in the corresponding period a year before. These are the exports from the Atlantic ports only:

	Flour—bbls.	*Wheat—bu.*	*Corn—bu.*
1882-3	7,127,895	57,080,364	32,954,610
1881-2	4,177,127	36,561,571	24,379,811
Excess, 1882	2,950,768	21,518,793	8,564,749
Increase	70 per cent.	60 per cent.	35 per cent.

Reckoning the flour at 1 barrel for 5 bushels of wheat, the exports of wheat from the Atlantic ports equal 93,720,139 bushels for the past nine months, against 57,447,206 in the same time last year, a gain of 36,272,933 bushels, or over 63 per cent. ... Of HOG PRODUCTS, the exports from New York, Boston, Portland, Montreal, Philadelphia, Baltimore, and New Orleans, from Nov. 1 to June 2d, were:

	1881-2	1882-3.
Pork—lbs	34,926,000	38,942,407
Bacon—lbs	276,792,853	265,798,619
Lard—lbs	158,380,248	144,896,831
	470,099,101	439,631,850

a decrease of over 30,000,000 lbs. This is the result of facts previously alluded to in the *American Agriculturist*, namely, that owing to the small corn crop of 1881, farmers crowded off all the hogs to market that were in any sort of condition, and this left far too few swine in the country to consume the better corn crop of 1882, and a smaller supply of pork, etc., for export. We can again enforce the lesson that farmers, especially in the corn-growing regions, should multiply their swine as rapidly as possible.

THE OUTLOOK.

The second week of June brings more favorable reports for both wheat and corn. The frequent showers during May have delayed corn planting somewhat, and retarded the growth of wheat, but there has not been a sufficient number of consecutive days of cold rains to materially injure the plants generally. In fact, there has been a stronger growth of stem and leaf, and with warm growing weather hereafter, there will be great improvement in the prospects of the wheat yield. The better weather now prevailing is affecting the market rates, wheat having declined 5 cents a bushel between June 1st and 6th. Our latest advices from farmers in Michigan, Wisconsin, Minnesota, Dakota, Iowa, Nebraska, and Kansas are all more hopeful than at any time before for months past. But with the cheapened freights, and the opening of new trunk railway lines from the seaboard to the Far West, increasing the competition, we may feel pretty certain that Europe will take all the wheat we wish to dispose of for a year or two, at prices that will remunerate our producers. As before explained, every reduction of price abroad has a strong tendency to increase the consumption.

A fair increased acreage of corn has already been got into the ground, and planting is still being pushed in many places, as well as replanting where the first seed failed. It is too soon to judge of the prospective growth; but farmers are so hopeful, that those who have been carrying large stocks of old corn, are now sending it to market, having given up the hope of a further advance.

VICTORIES

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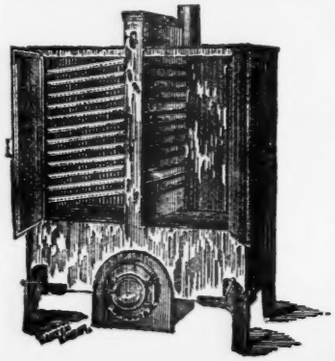

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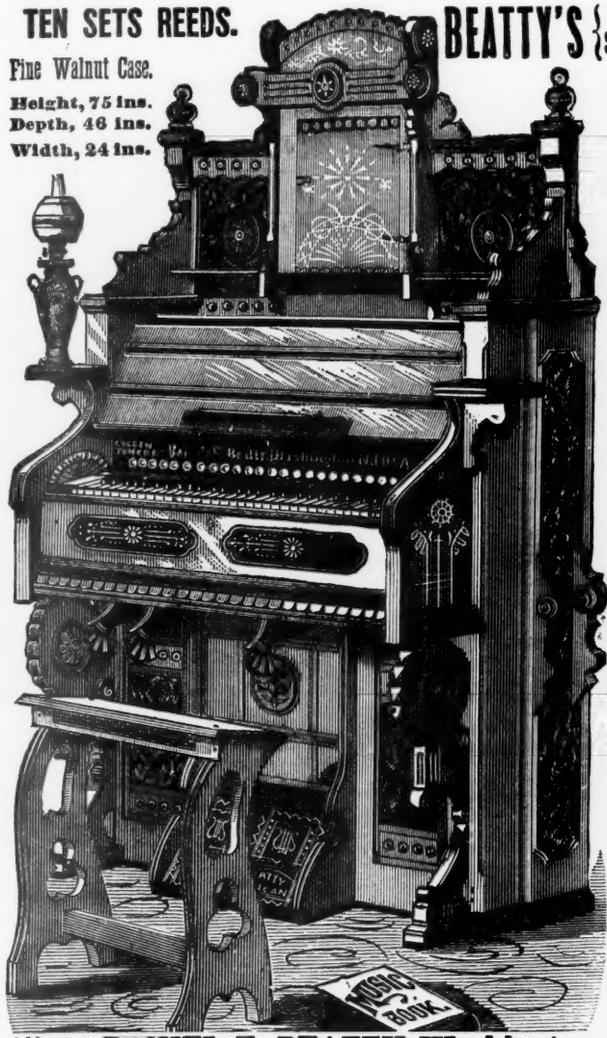

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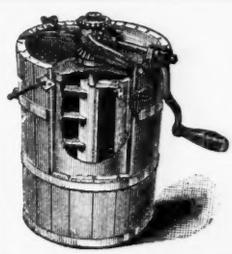

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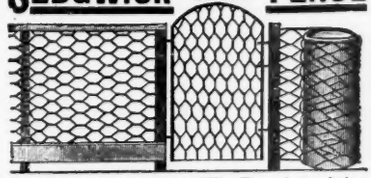

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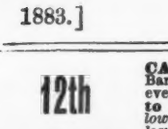

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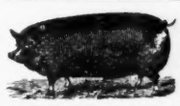

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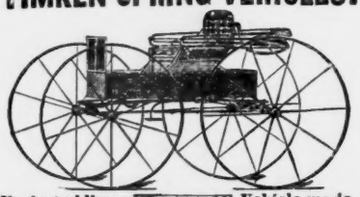

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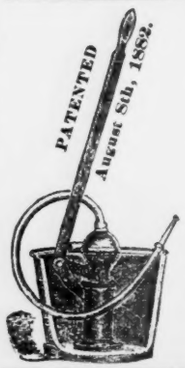

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